

D7

JOINT



SERVICES

# RECOGNITION

*Journal*



Vol. 23 AUGUST 1968 No. 8

# GERMAN LEOPARD BATTLE TANK



Since it began to come off the production line at the Krauss-Maffei factory in Munich in September 1965, the Leopard has become one of the most numerous tanks in Central Europe. It now equips one half of the German Army's tank units and it has also been ordered by the Belgian Army. Moreover, its purchase is being considered by the Norwegian Army and others. Externally it is somewhat similar to the U.S. M48 and M60 tanks but it does not have their clumsy commander's cupolas which contributes to it being significantly lower. It is also longer and has seven road wheels per side, instead of six. Like almost all current battle tanks it is manned by a crew of four and is armed with a 105-mm. gun, which is of British manufacture.



*The Leopard was the subject of a lesson in the November 1967 issue of the Journal*



JOINT SERVICES

RECOGNITION JOURNAL

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## GETTING THE PRIORITIES RIGHT IN ARMOURED FIGHTING VEHICLE IDENTITY TRAINING

Armoured Fighting Vehicle identification demands little knowledge but depends on the acquisition of a skill; and this is achieved by employing correct procedures.

That one cannot acquire the skill to identify AFVs without gaining some technical knowledge goes without saying, but to try to impart technical knowledge before acquiring identification skill fails just as much as any other system which attempts to put the cart before the horse. It can be done, of course, but it's pretty difficult. That is hard fact and not opinion.

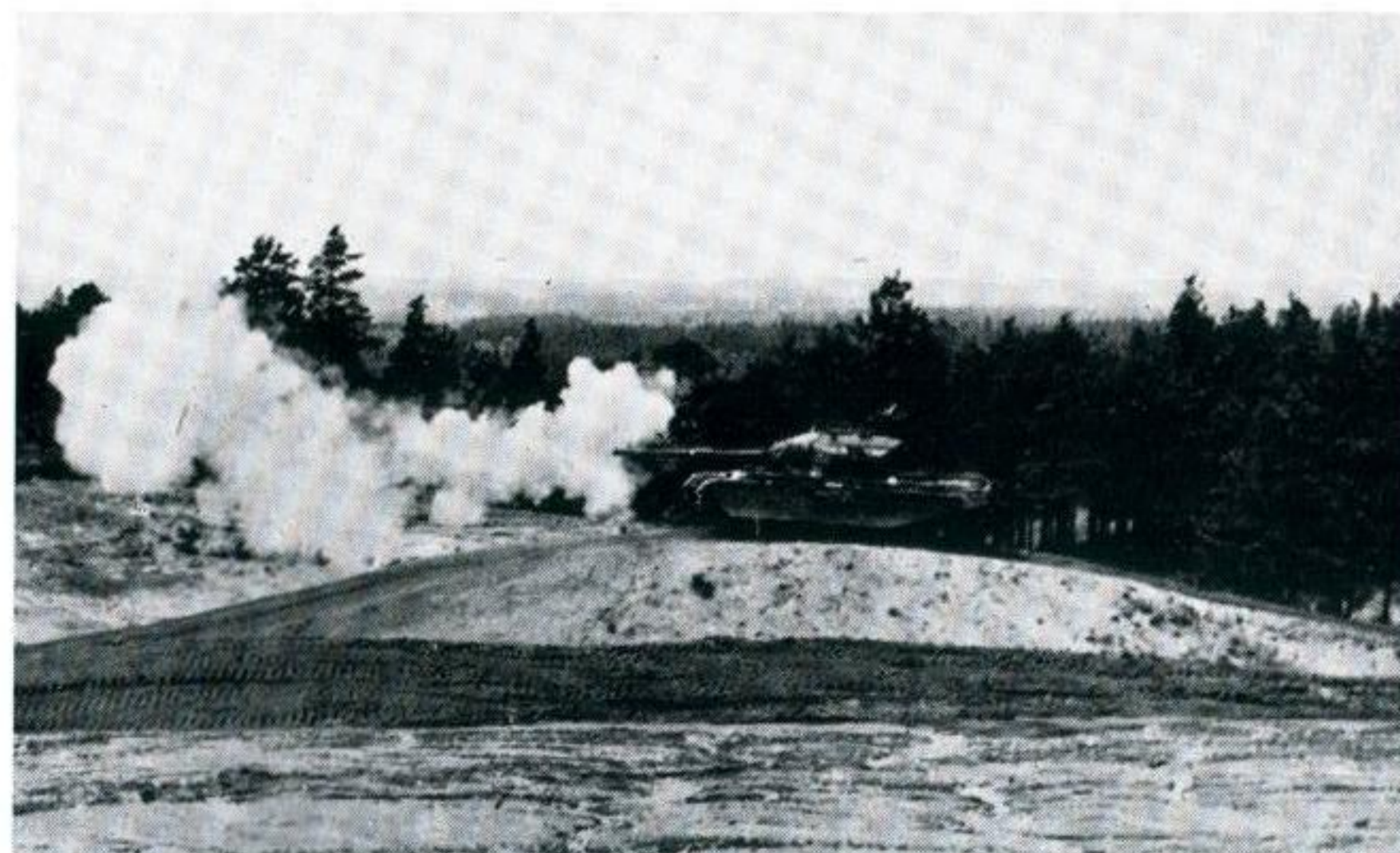
Another hard fact. Training cannot be efficient if it is made too difficult. It seems to be a false notion of so many instructors that the harder the lesson the more effective it is. We receive requests for distant views of AFVs, ships and aircraft "for recognition training". If the writers had asked "for recognition tests" we believe that they would be more on the right track.

"Learn it large (or close to) and in this game you will certainly know it small" is a good maxim. After all, how can one see details of a distant object? The distant view is used as part of a test of how effective training has been and it is designed to find out whether the training has been properly digested or not. To try to train by tests is hard on instructors and pupils alike—and practically profitless.

Below is an example of a view which is really too small for anything but testing—for which it could be excellent. The

skilled AFV spotter will know it instantly but what of the trainee who doesn't? To the untrained eye it is a heap of iron, possibly a tank. Try it on Grandmamma! Few grandmammams are skilled in tank identification we believe—though we live in strange times.

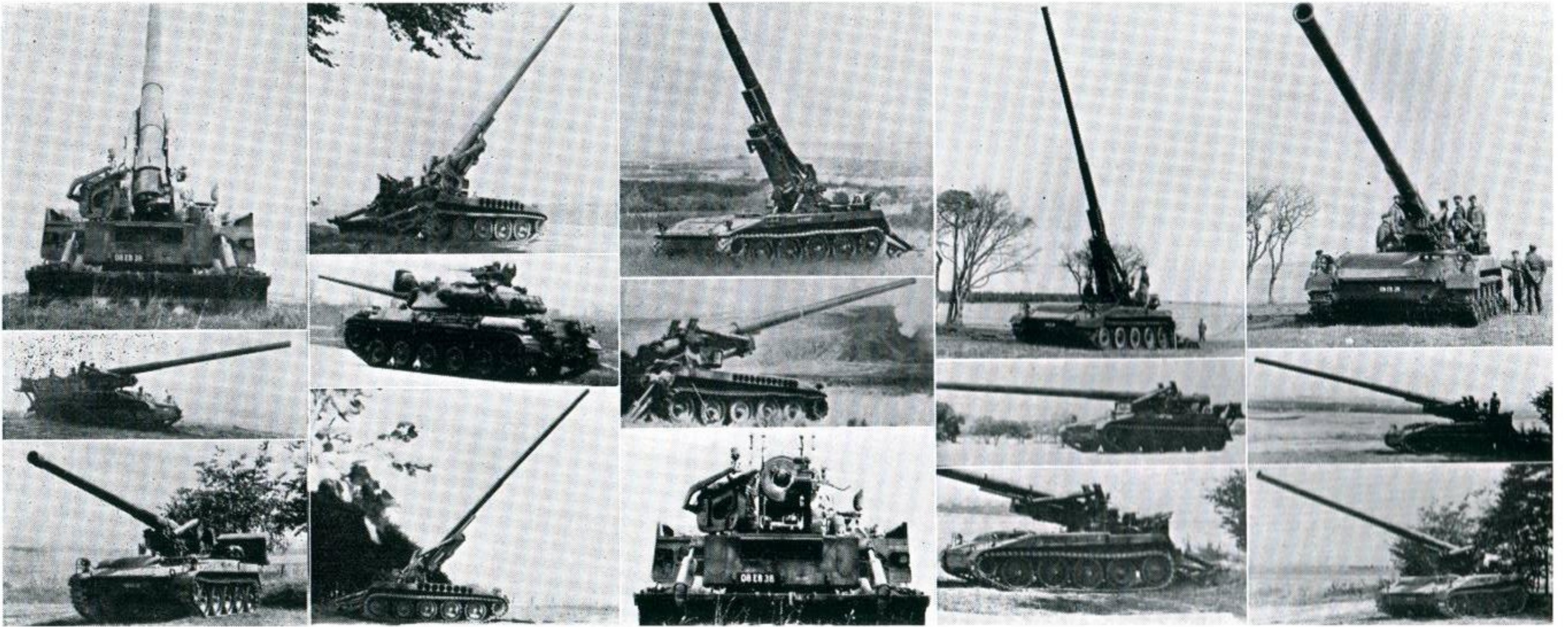
We do not suggest attempting to train Grandmamma to recognise the Centurion—which is the subject in the picture—but if your need is to train anyone else you will find effective lessons in the following issues of the *Journals*: September 1962, March 1962, March 1958.



# TEST PAPERS

Something to show you how good you are  
—or are not—at identifying these tanks.

M107?



M60A1E1?



YP-408?





## LESSON INSTRUCTIONS

Identity training is a matter of "doing", rather than of gathering information. Submit to the instructions given in every edition of the *Journal* and your ability to identify will become automatic.

1. Read the text associated with the lesson.
2. Prepare a list of target numbers so as to be able to tackle the targets in any order.
3. Identify the target pictures by comparing them with the key views: start with the easy ones so as to gain experience: also use targets already identified to solve the more difficult ones.
4. When certain of the identity of a target write down its name *IMMEDIATELY* against the appropriate number on your list. **THIS IS IMPORTANT.**
5. Lessons should not be hurried or given a time limit. So far as beginners are concerned, it is more important to identify accurately than quickly.
6. Do not attempt conscious memorising of details, shapes, or names. The procedure will take care of that. Do not attempt to do the lesson without the key too soon, wait until your ability to do so is self-evident.

### Gebrauchsanweisung für die Typenlehre

Um den größten Nutzen aus den Übungsbildern, die in diesem Heft veröffentlicht werden, zu ziehen, sollte wie folgt verfahren werden.

1. Den zur Lehre gehörigen Text lesen.
2. Eine numerierte Typenliste vorbereiten, in der angesprochene Typen in eine gewisse Ordnung gebracht werden können.
3. Typen ansprechen durch Vergleich mit den Hauptansichten (von oben, von unten, von vorne, von hinten und von der Seite). Anfangen mit den einfachen Bildern, um Erfahrung zu bekommen. Die angesprochenen Typen zur Ansprache der schwierigeren benutzen.
4. Wichtig: Sobald ein bestimmtes Flugzeugbild mit Sicherheit richtig angesprochen ist, sofort die Typenbezeichnung in die entsprechende Stelle der Liste eintragen.
5. Bei der Übung nicht beeilen oder eine zeitliche Begrenzung festlegen. Für Anfänger ist es wichtiger, richtig anzusprechen als schnell.
6. Nicht mit Einzelheiten, Umrissen, Namen aufhalten.

# U.S. Army light tank

## M41

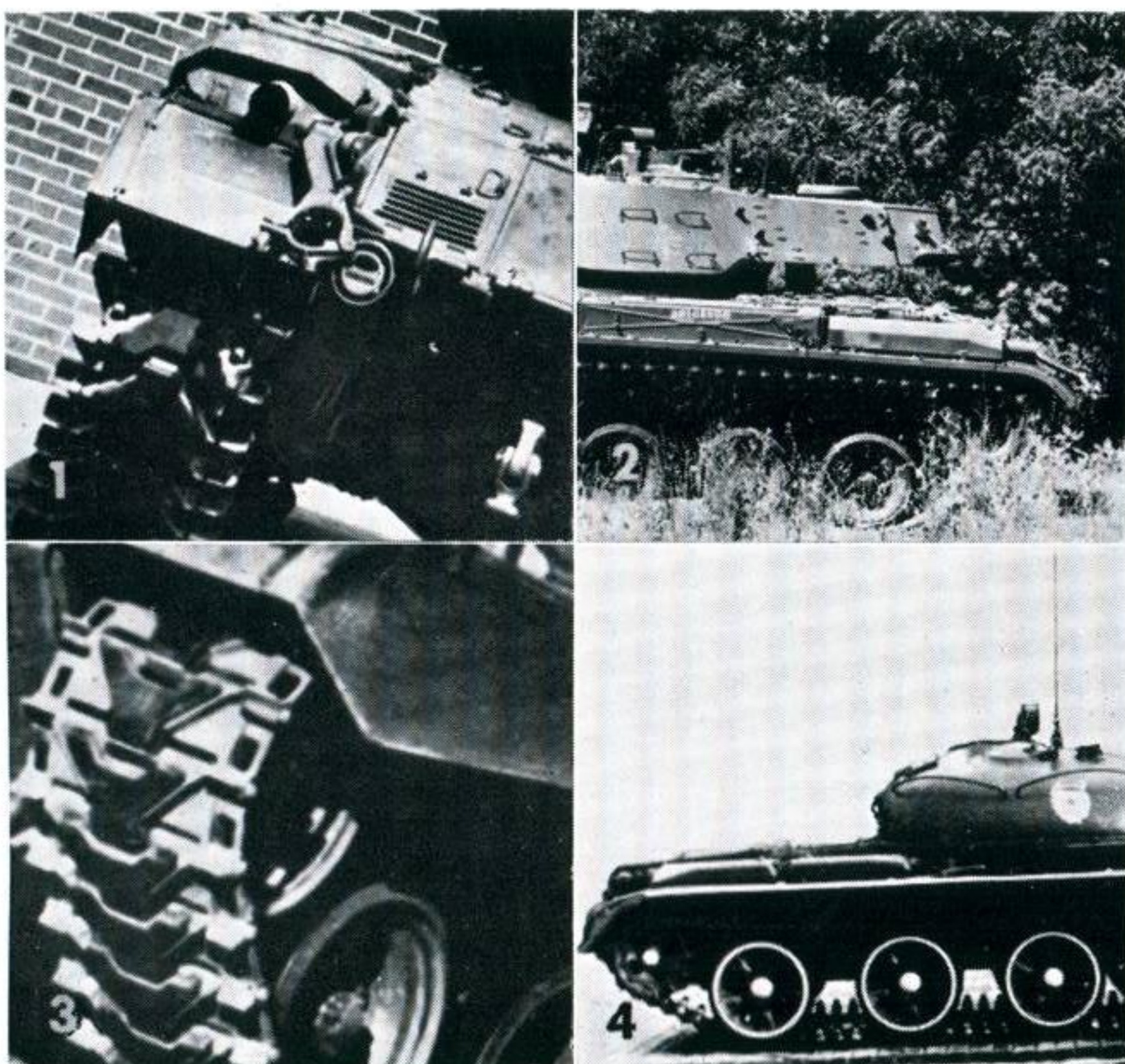
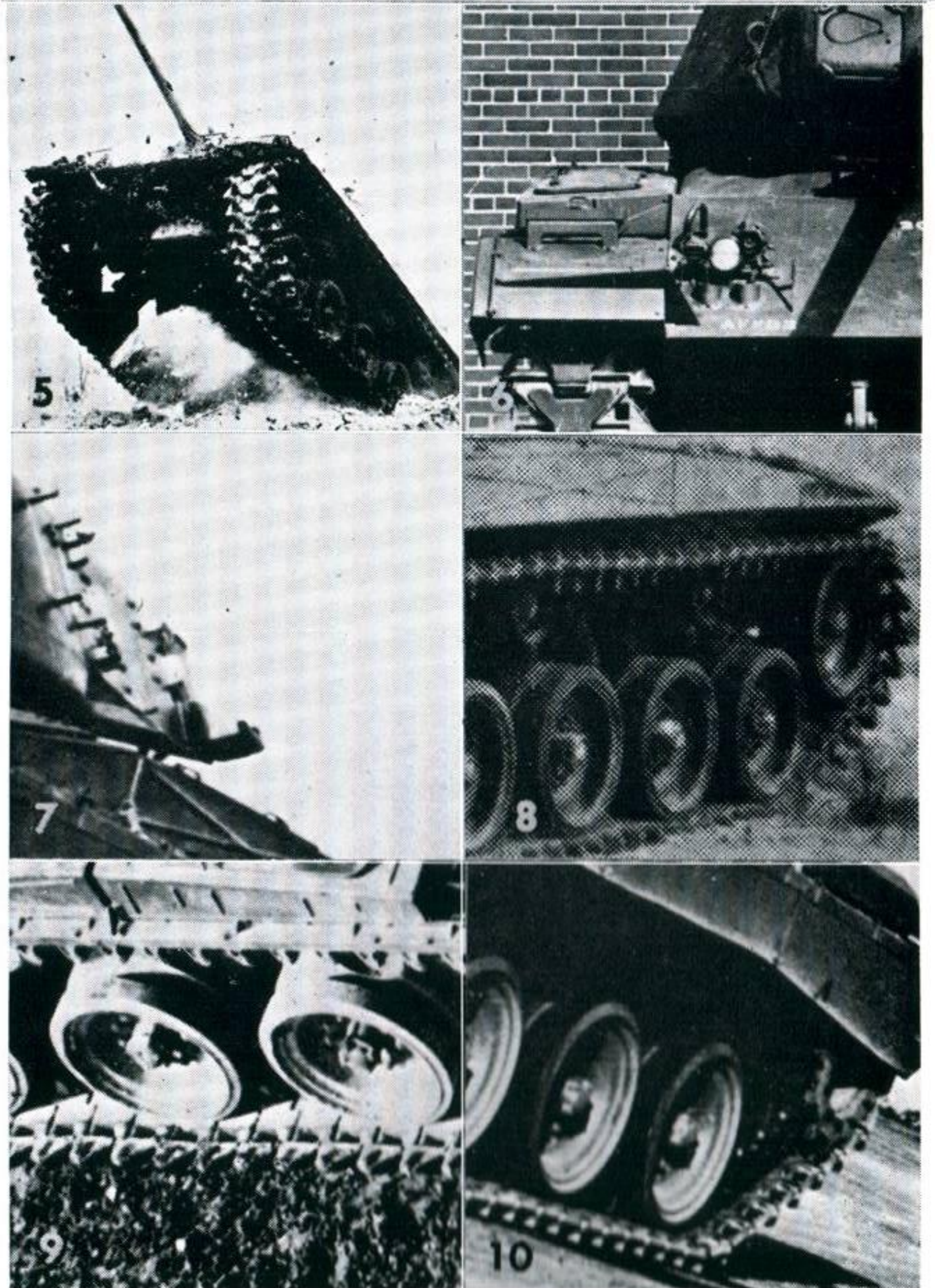


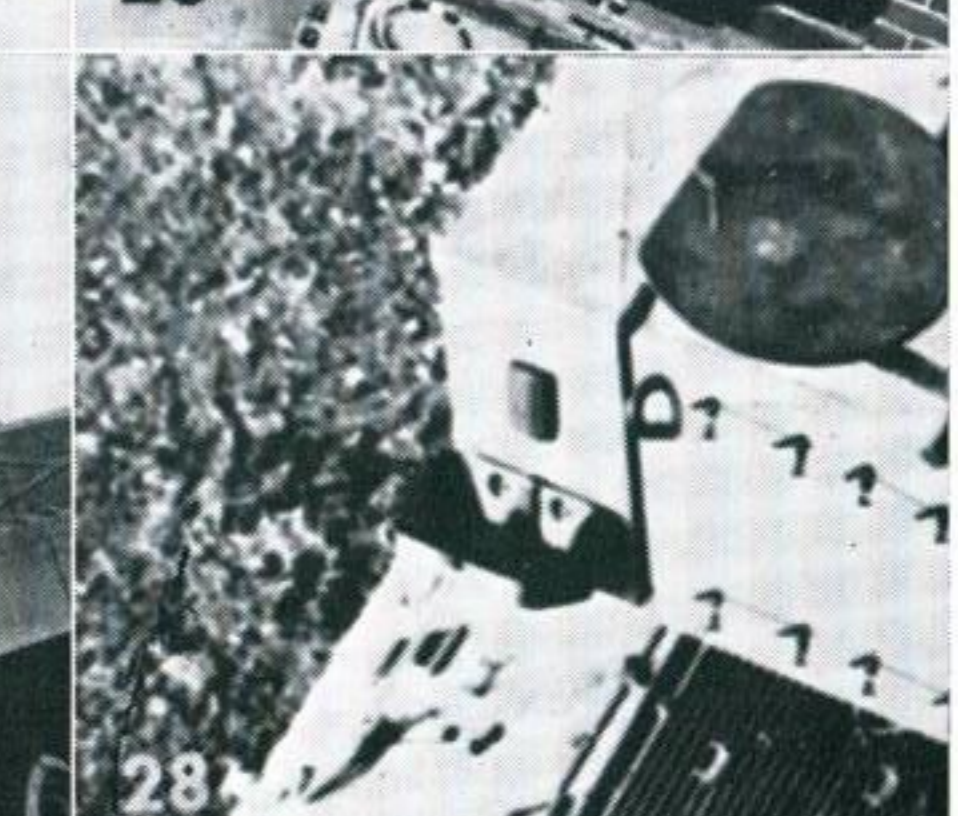
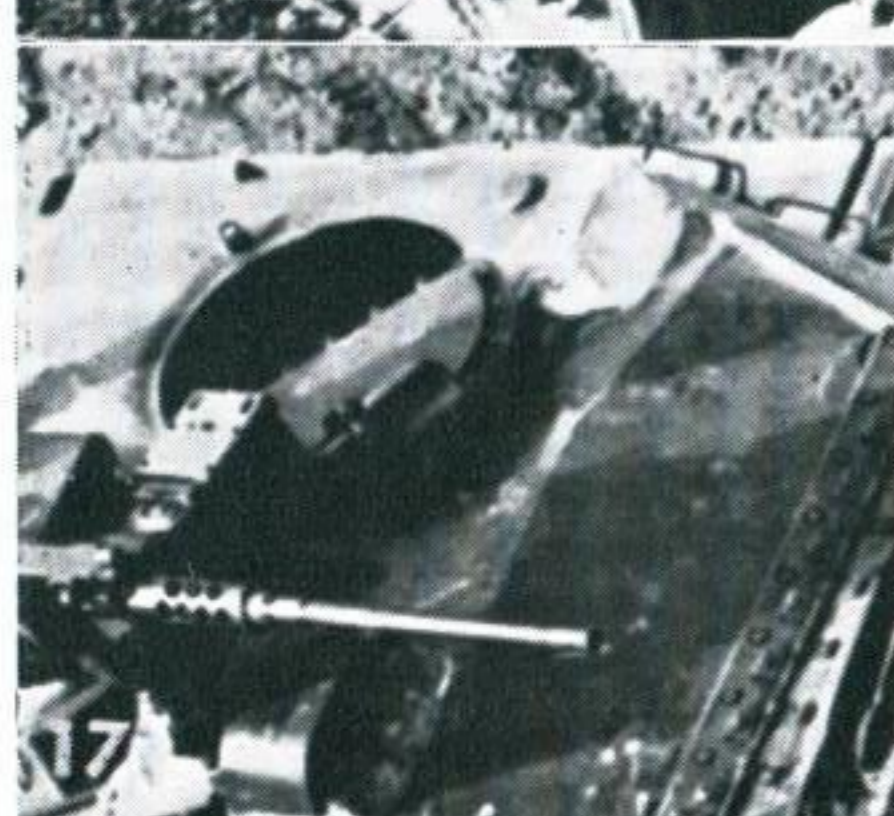
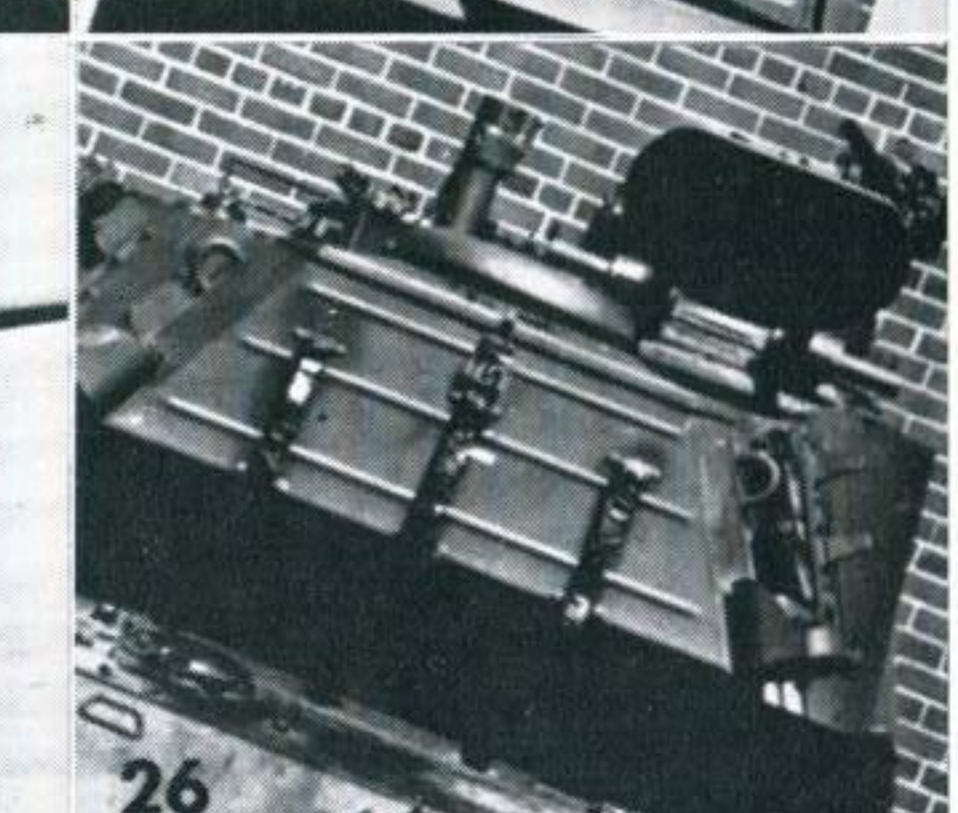
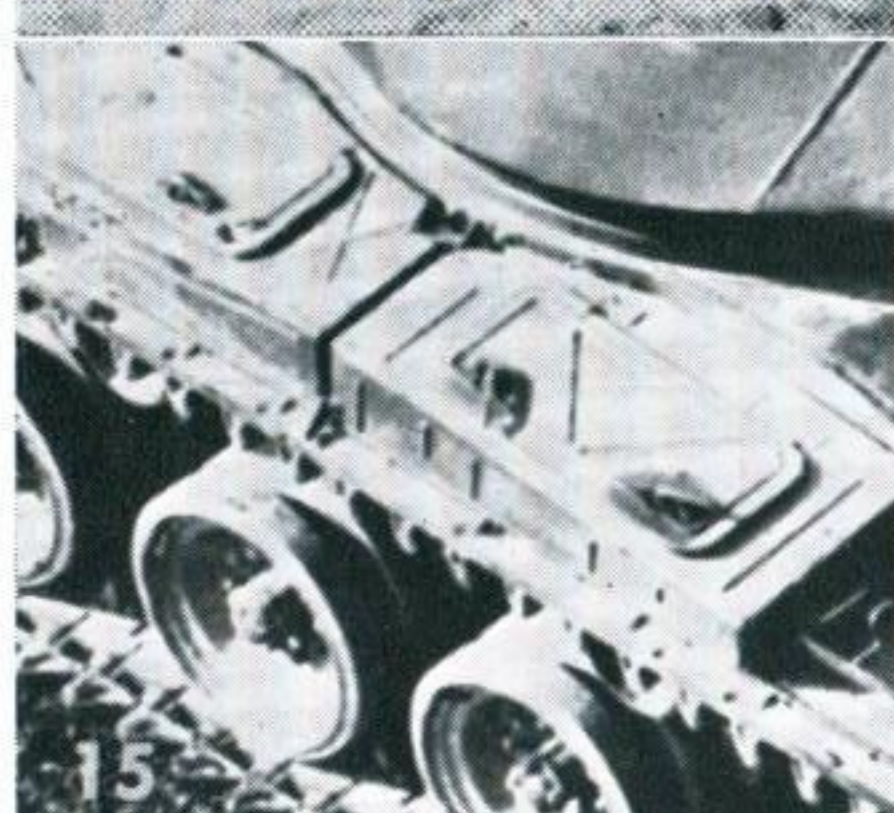
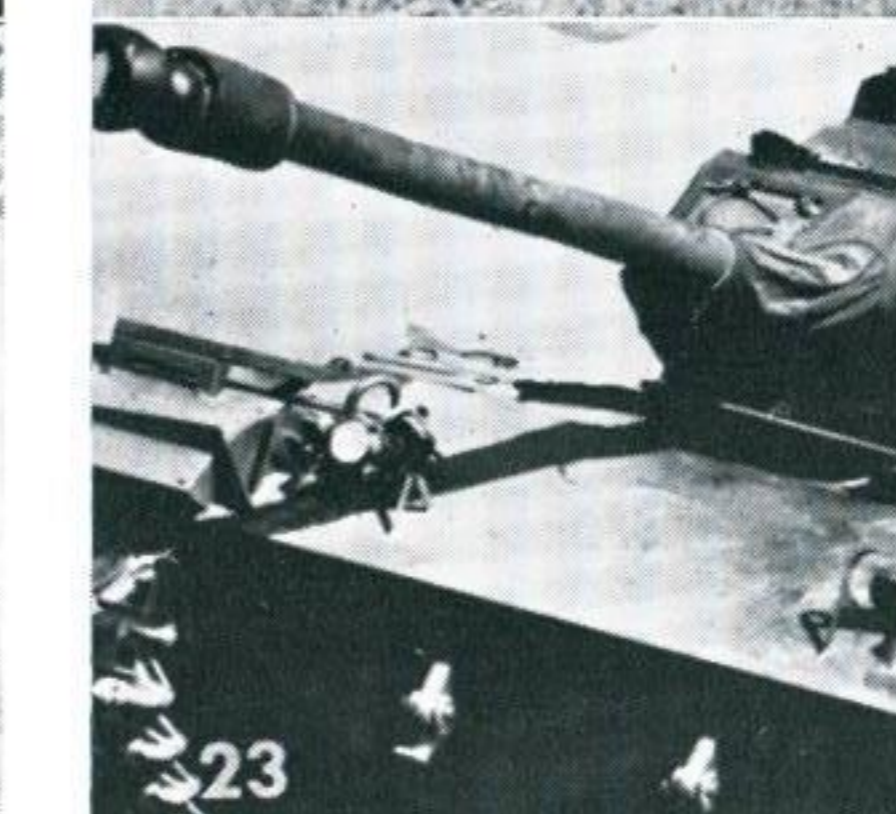
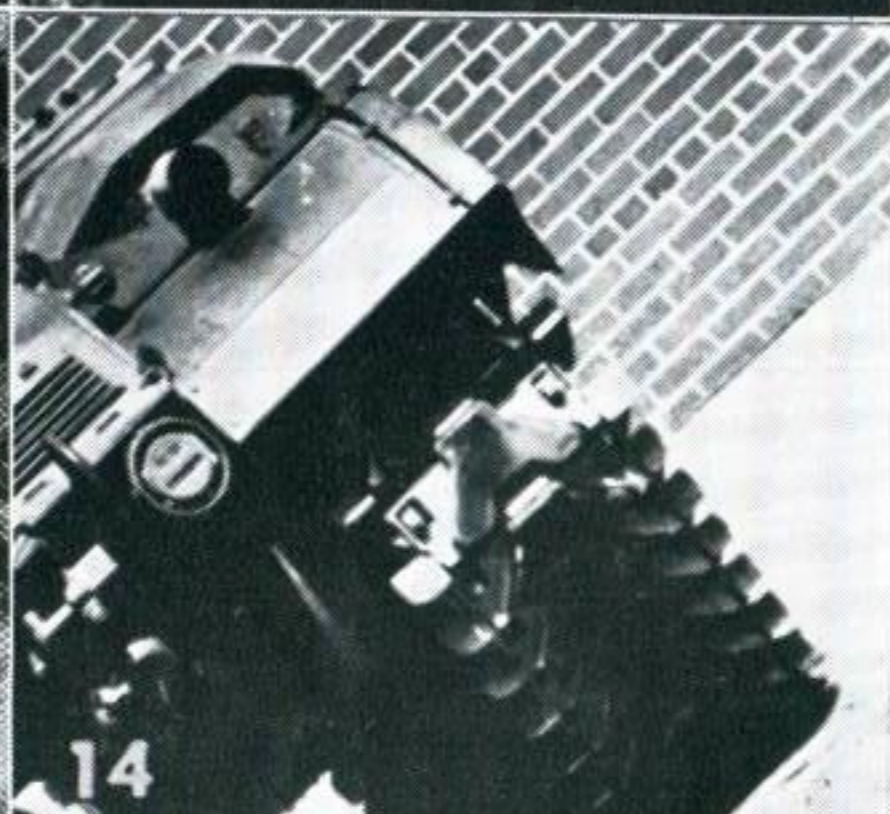
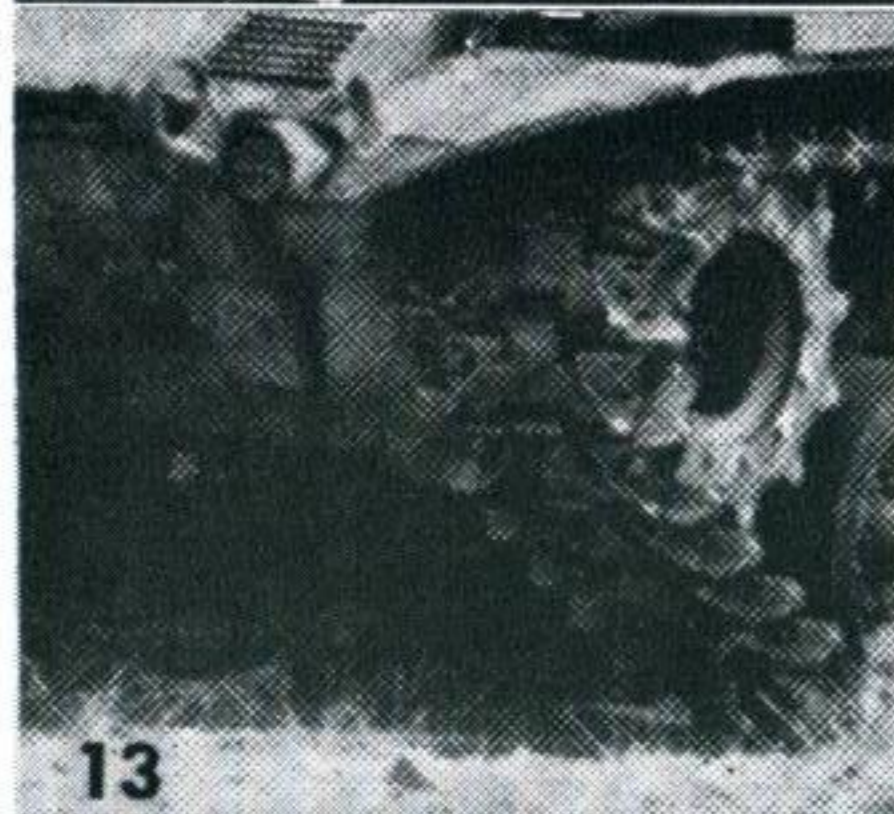
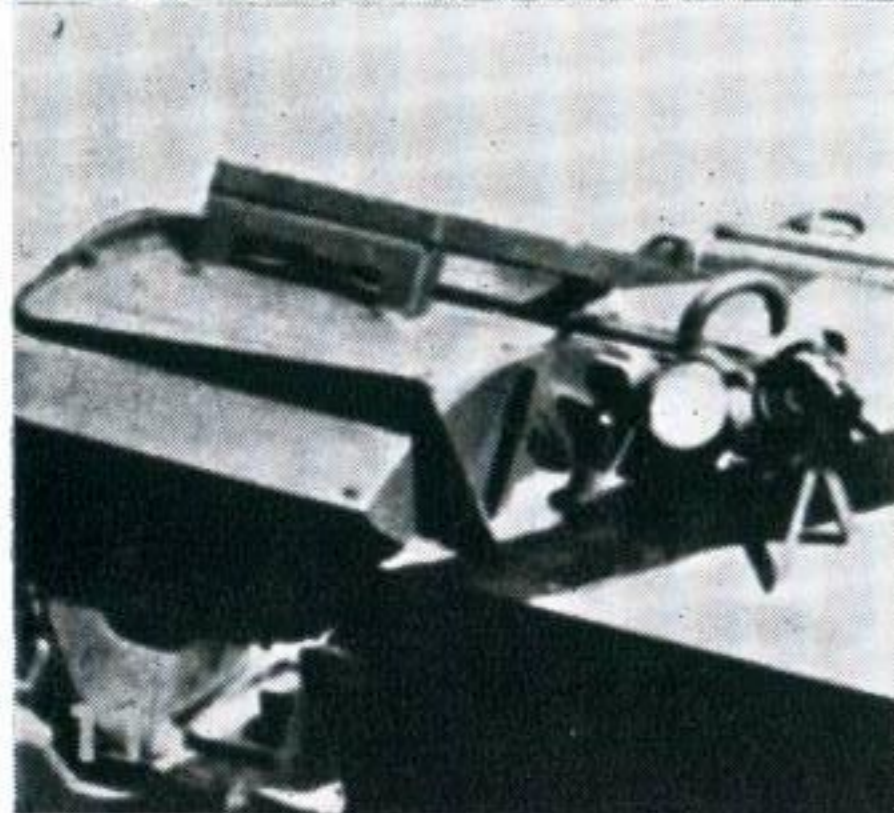
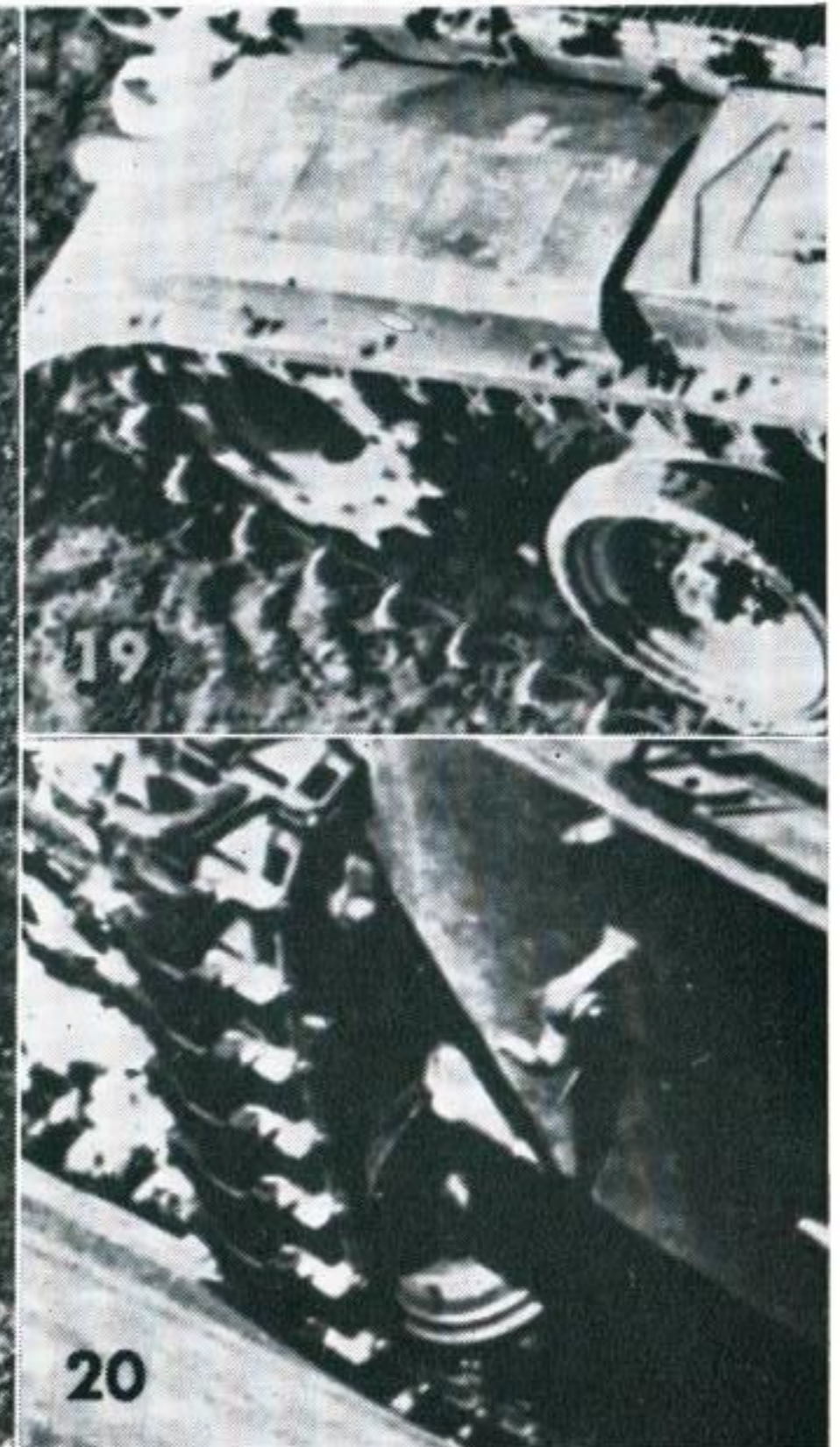
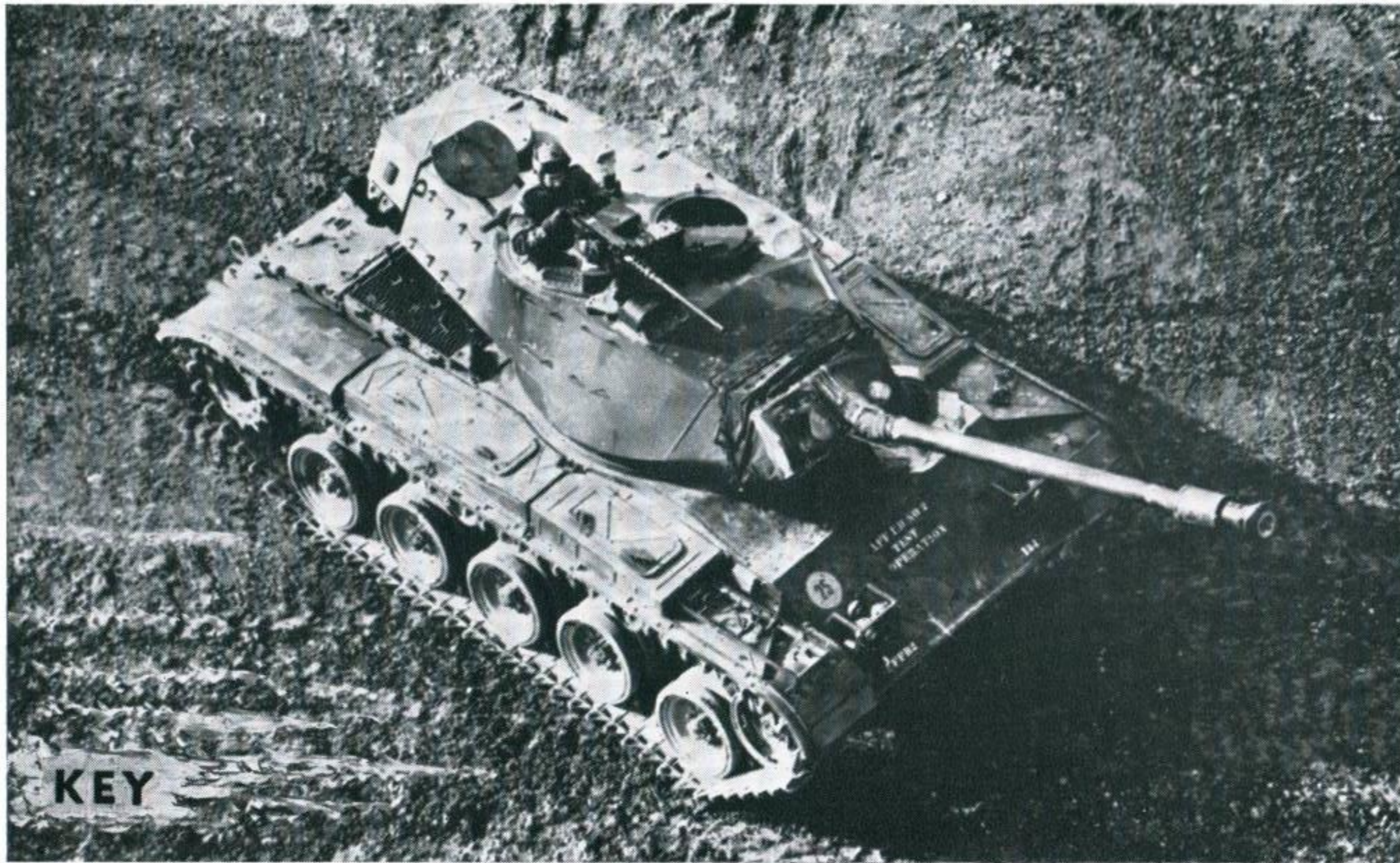
KEY

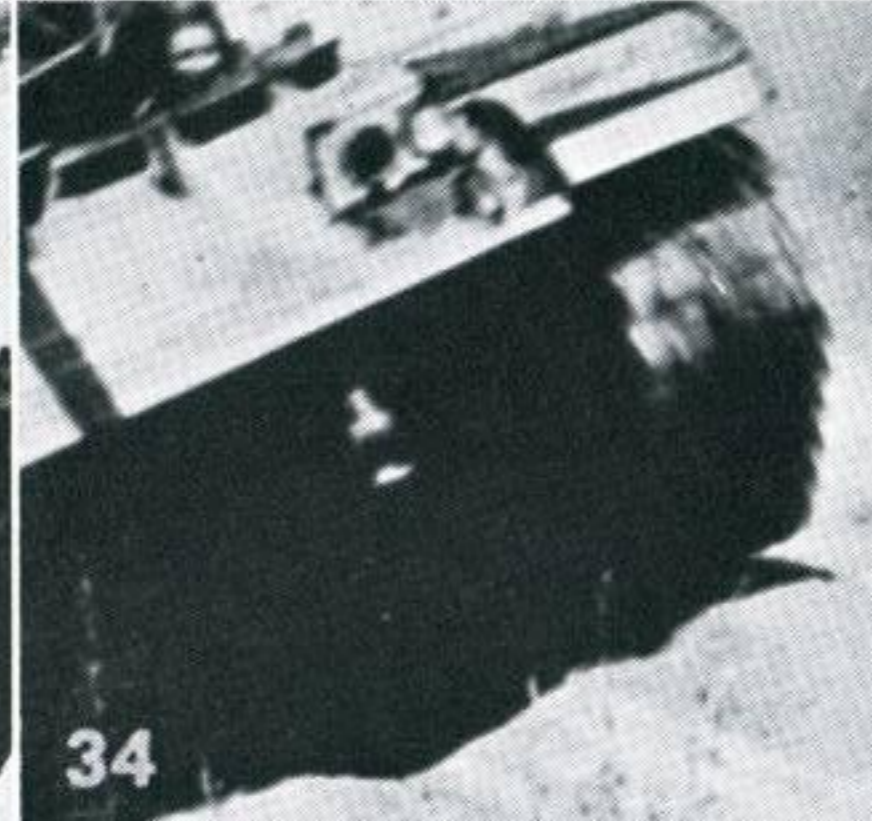
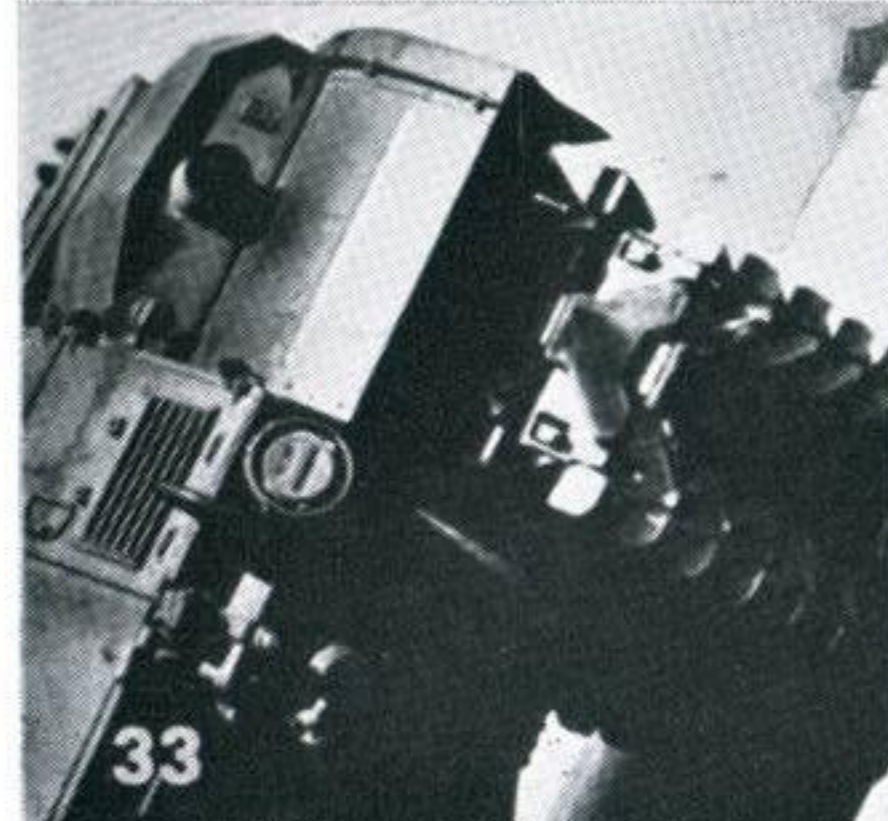
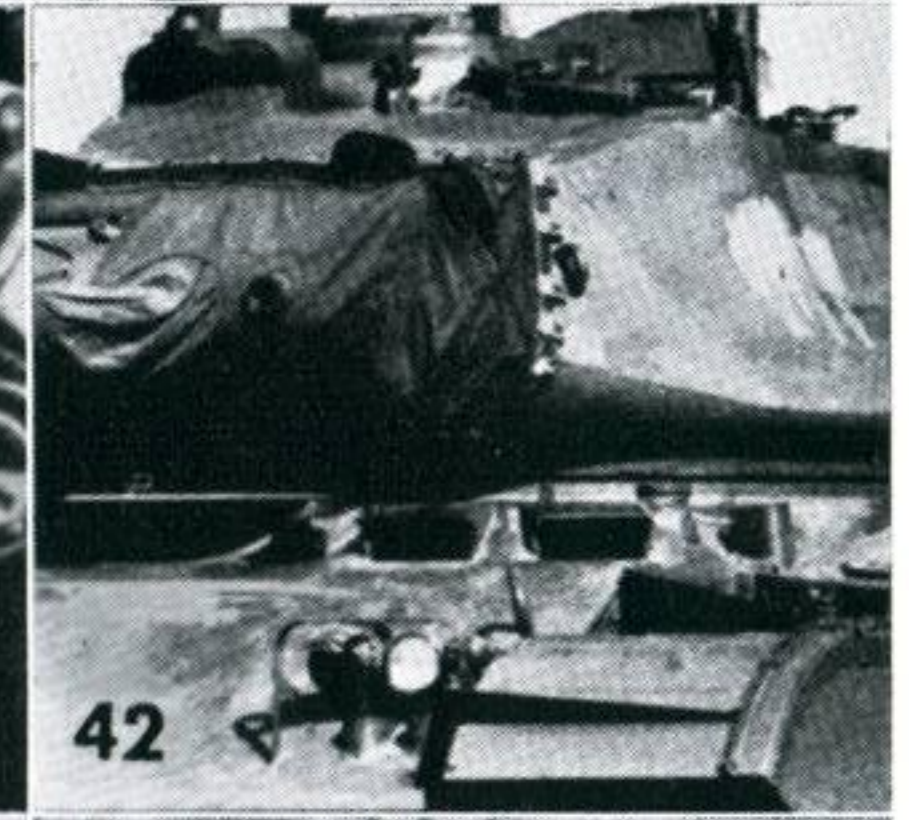
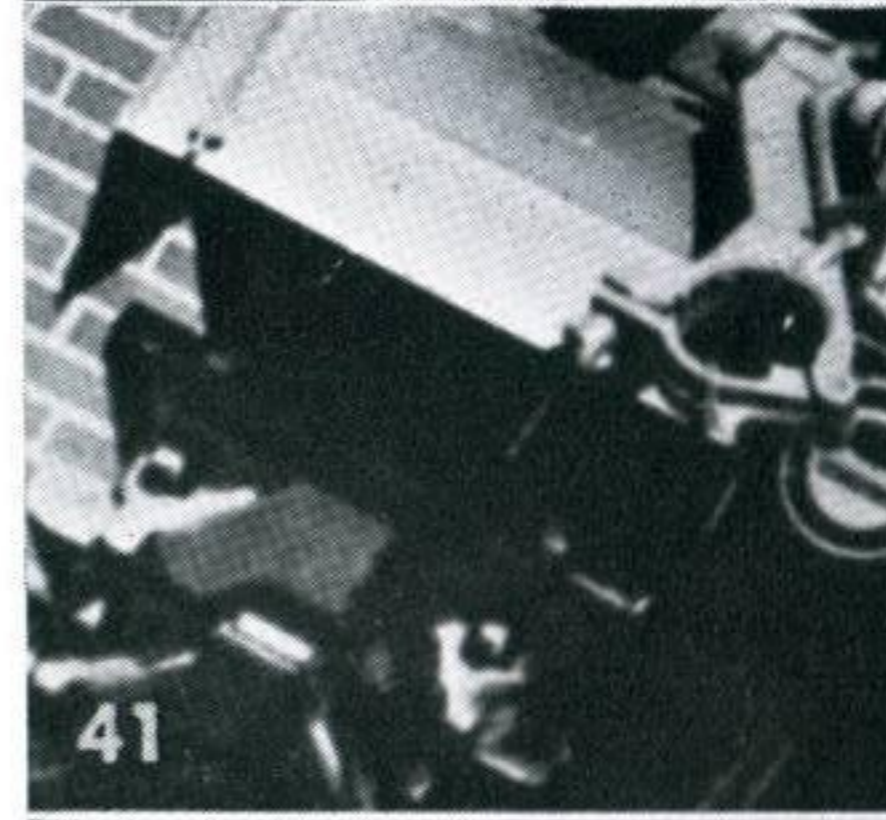
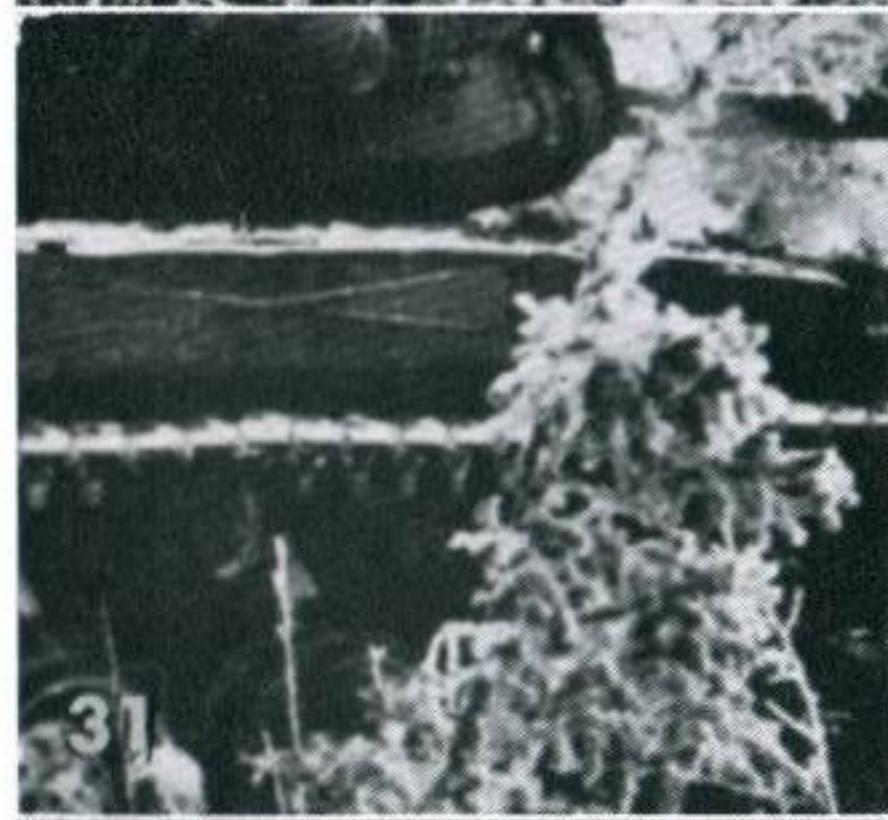
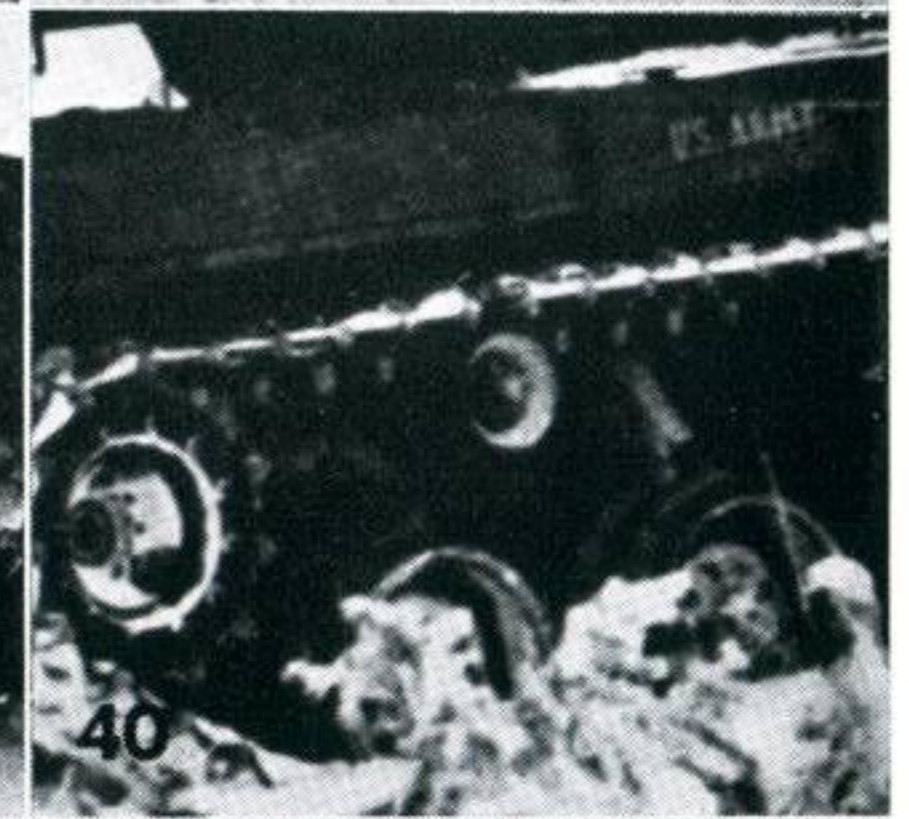
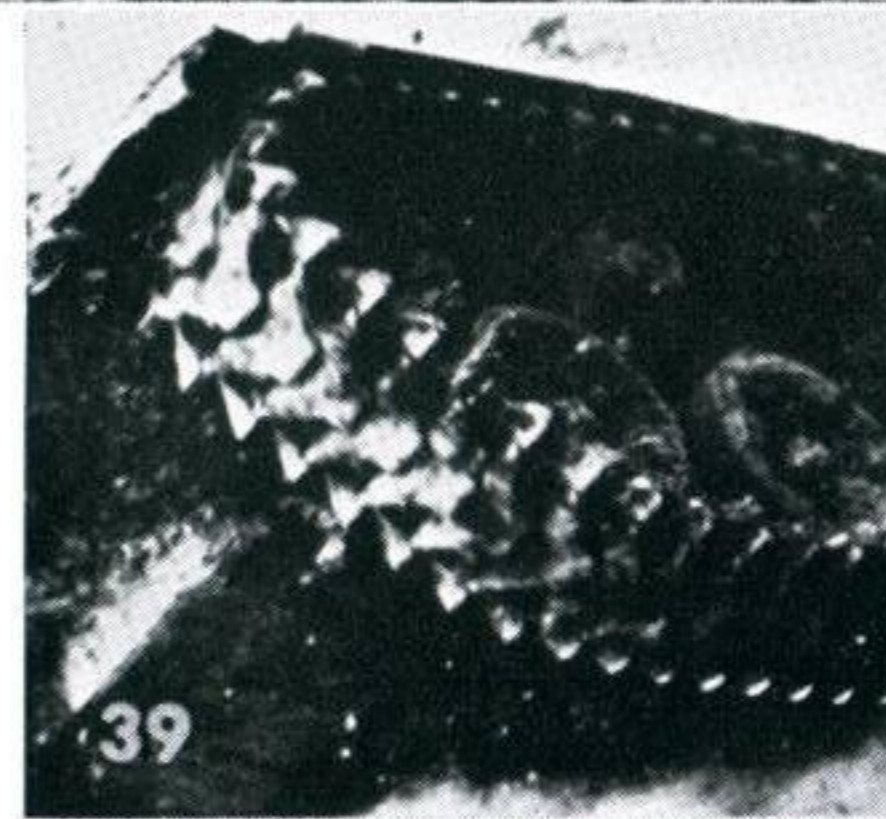
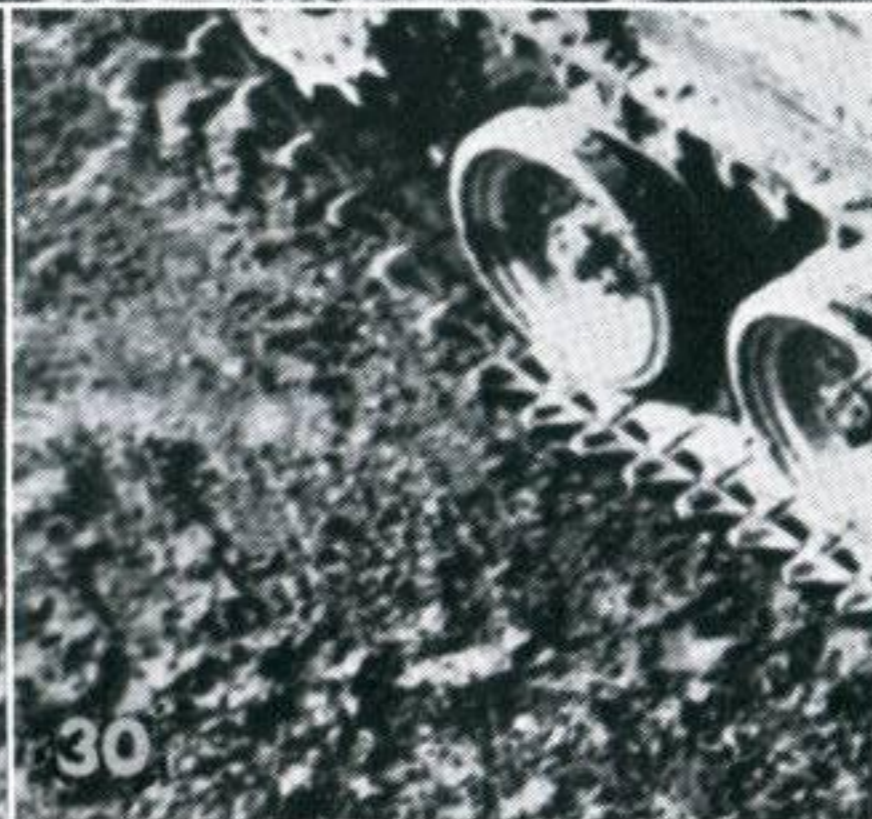
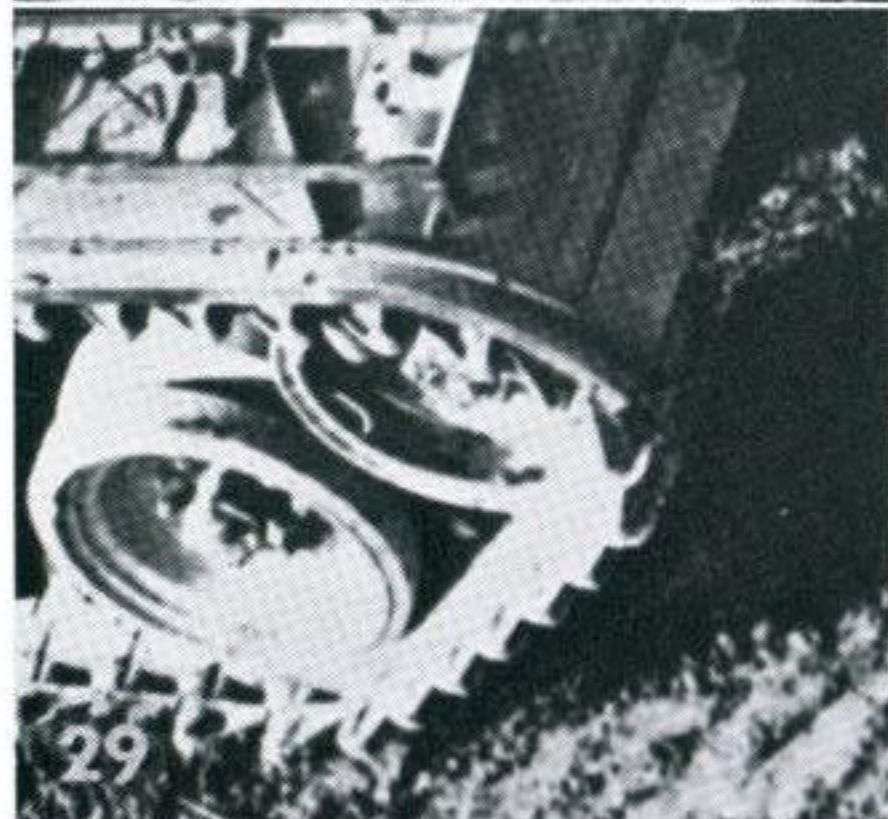
Lesson instructions are on page 201 Solutions on the back cover

The M41 light tank was first unveiled, in the T41 prototype form, eighteen years ago, at the outbreak of the Korean War. It is, therefore, quite an old vehicle and has already been the subject of a lesson in the December 1960 issue of the *Journal*. However, it continues to be used not only by the U.S. Army but also by several others, including the German, Italian and Thai Armies and has been in action recently in Viet Nam.

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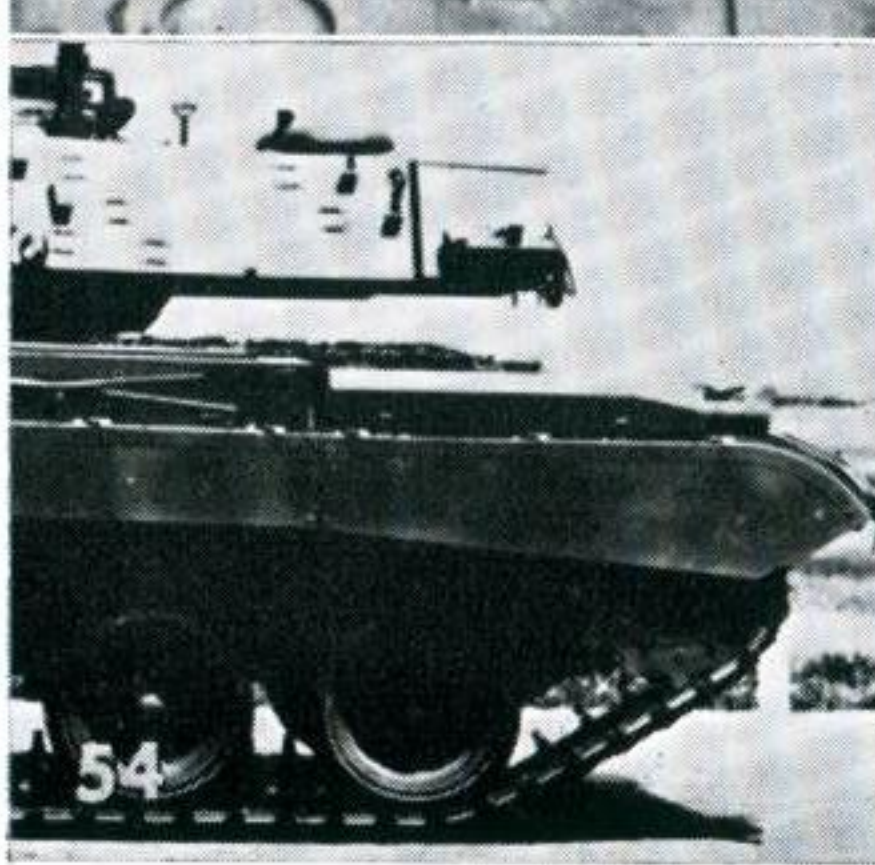
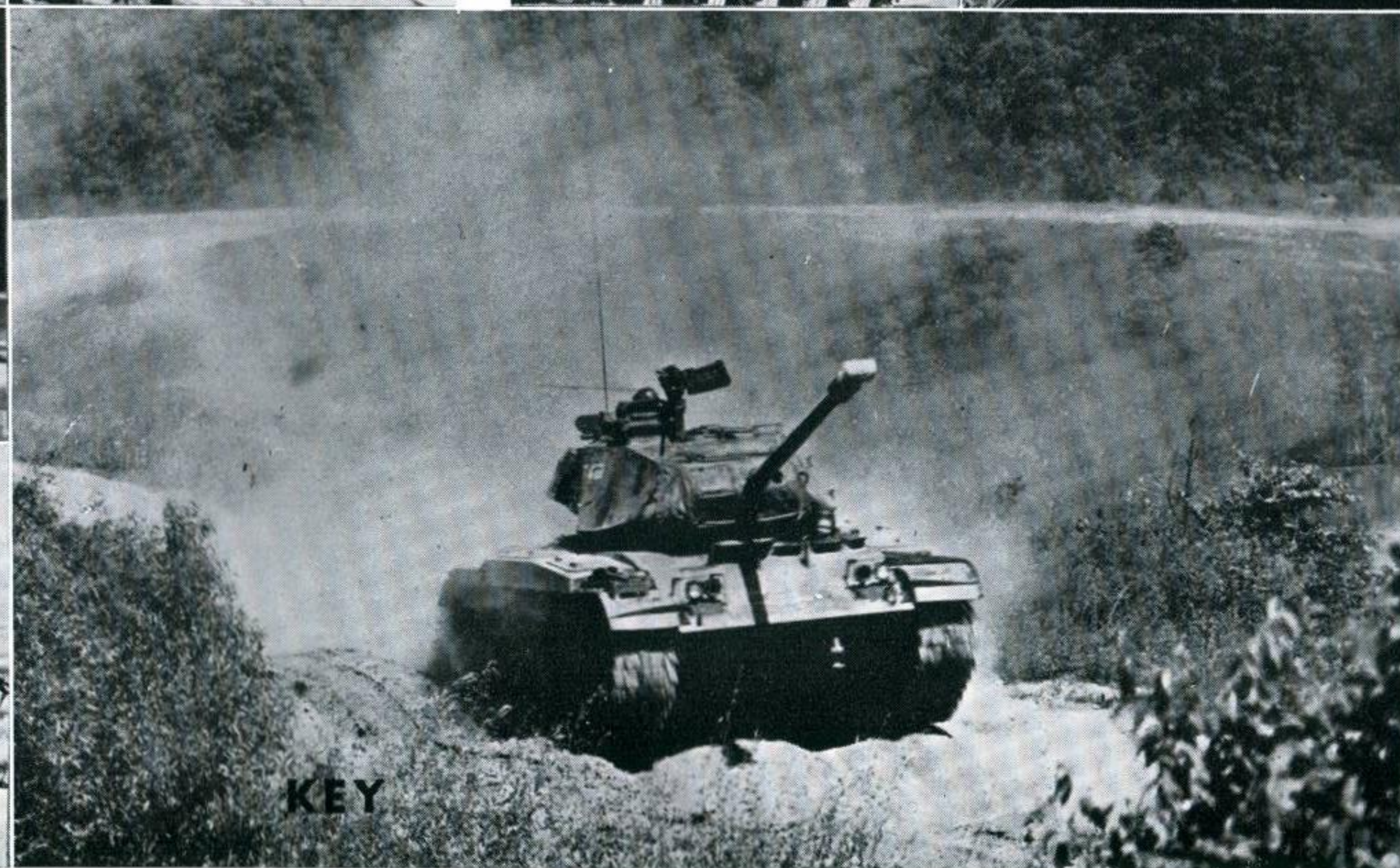
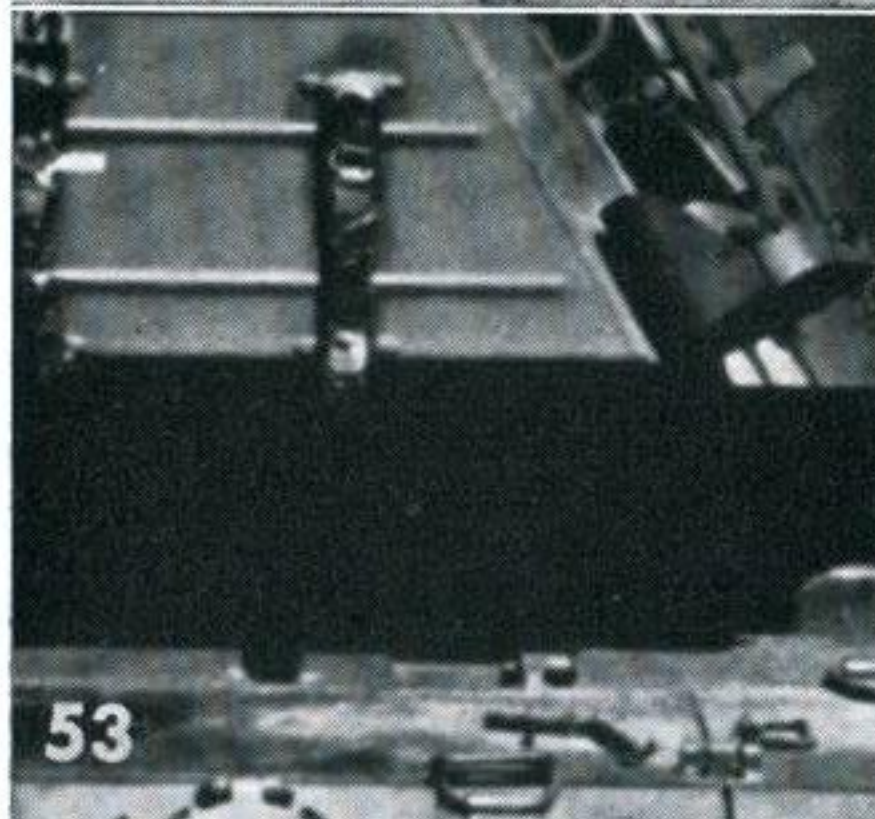
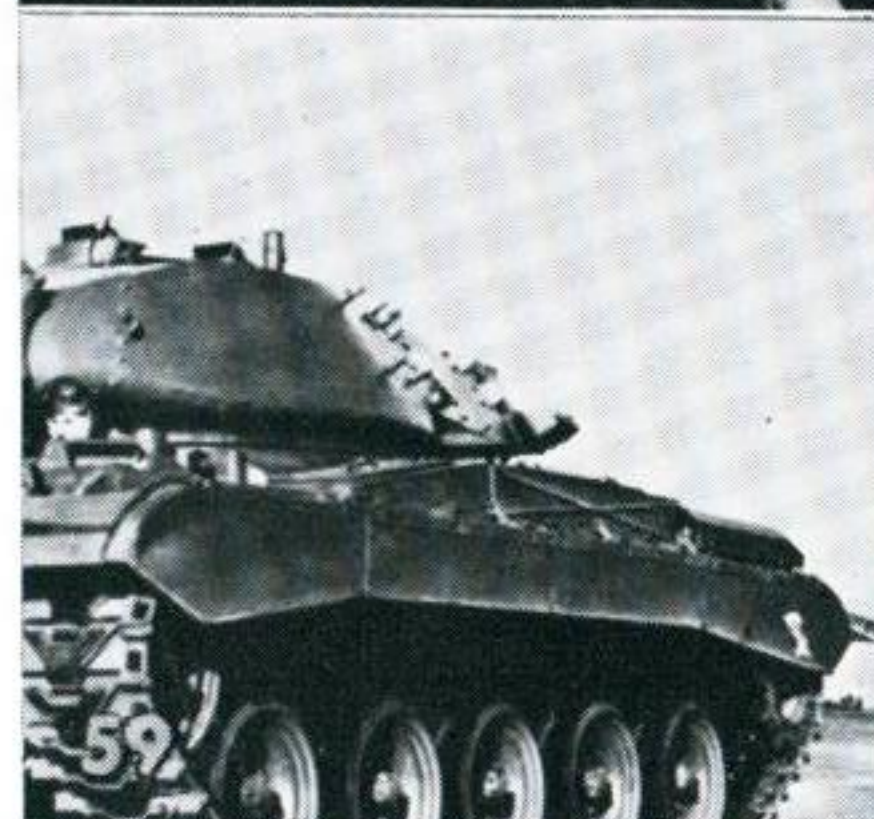
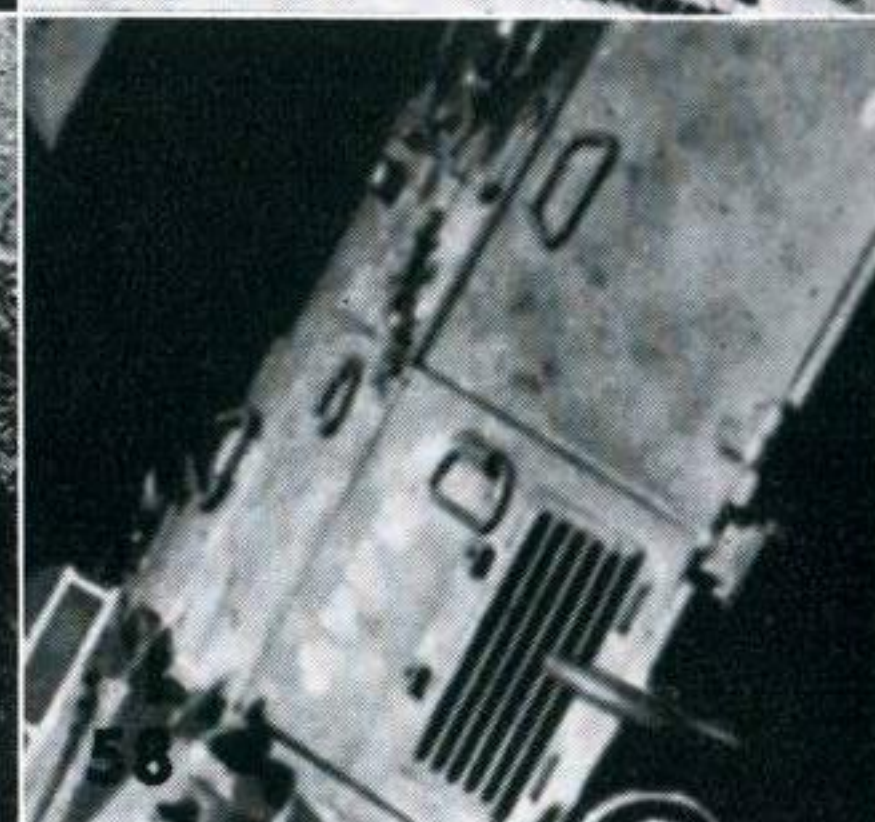
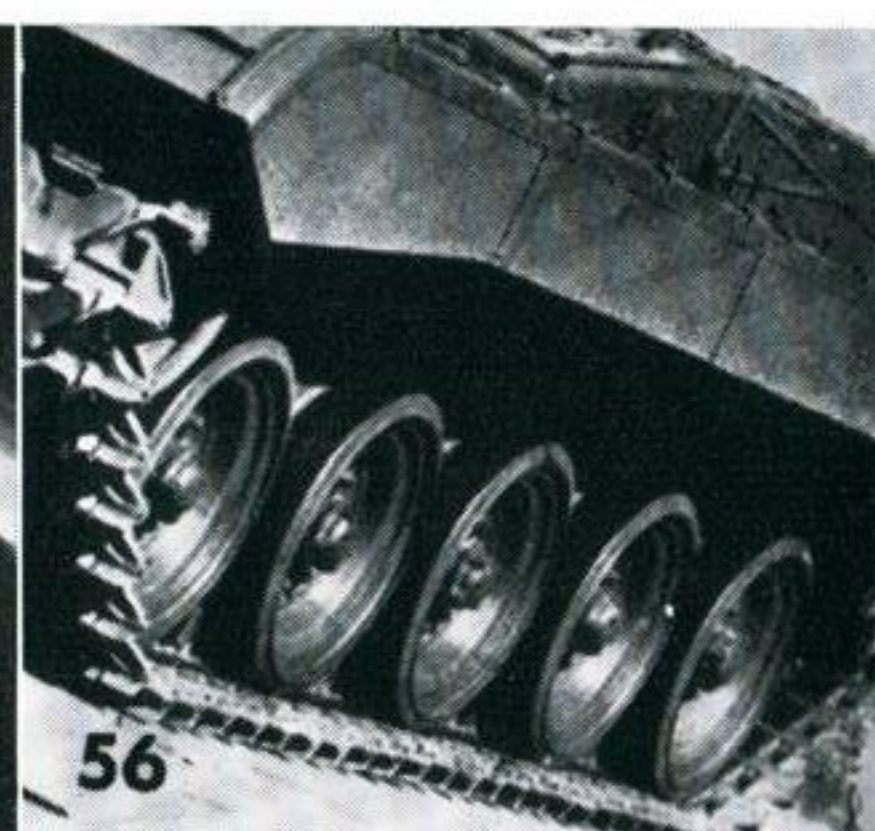
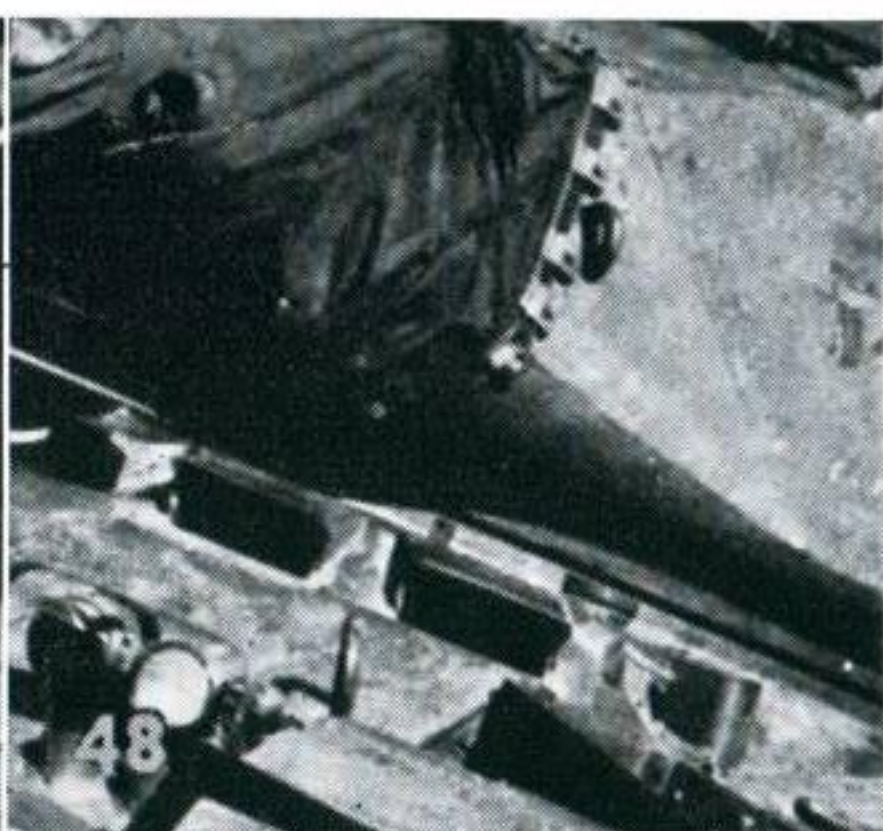
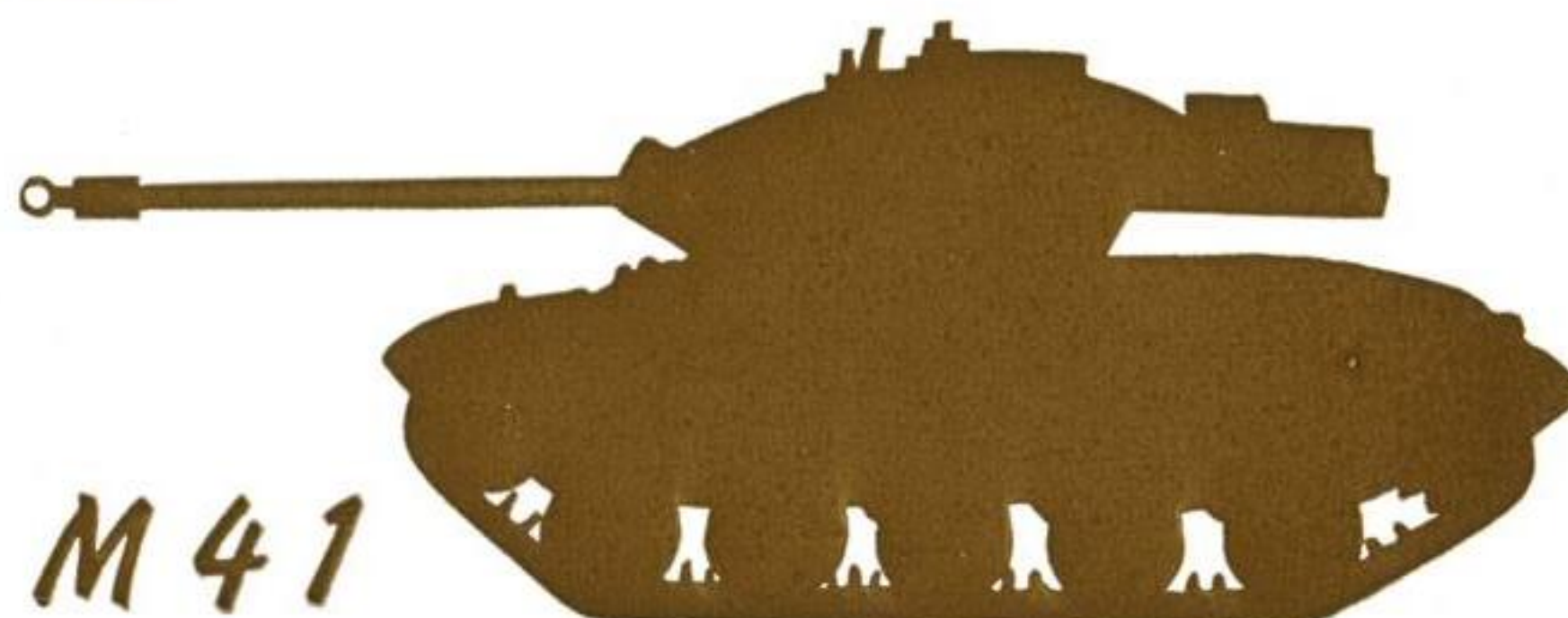


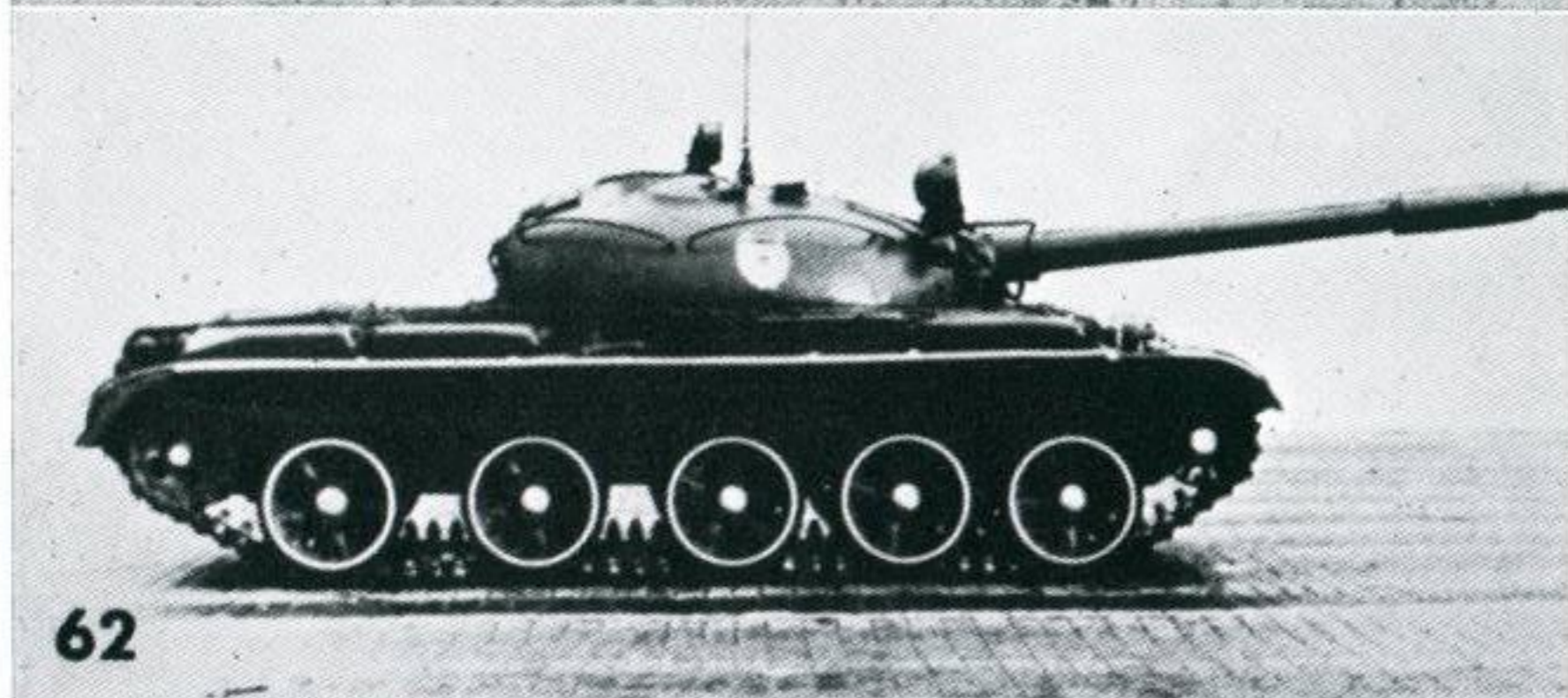
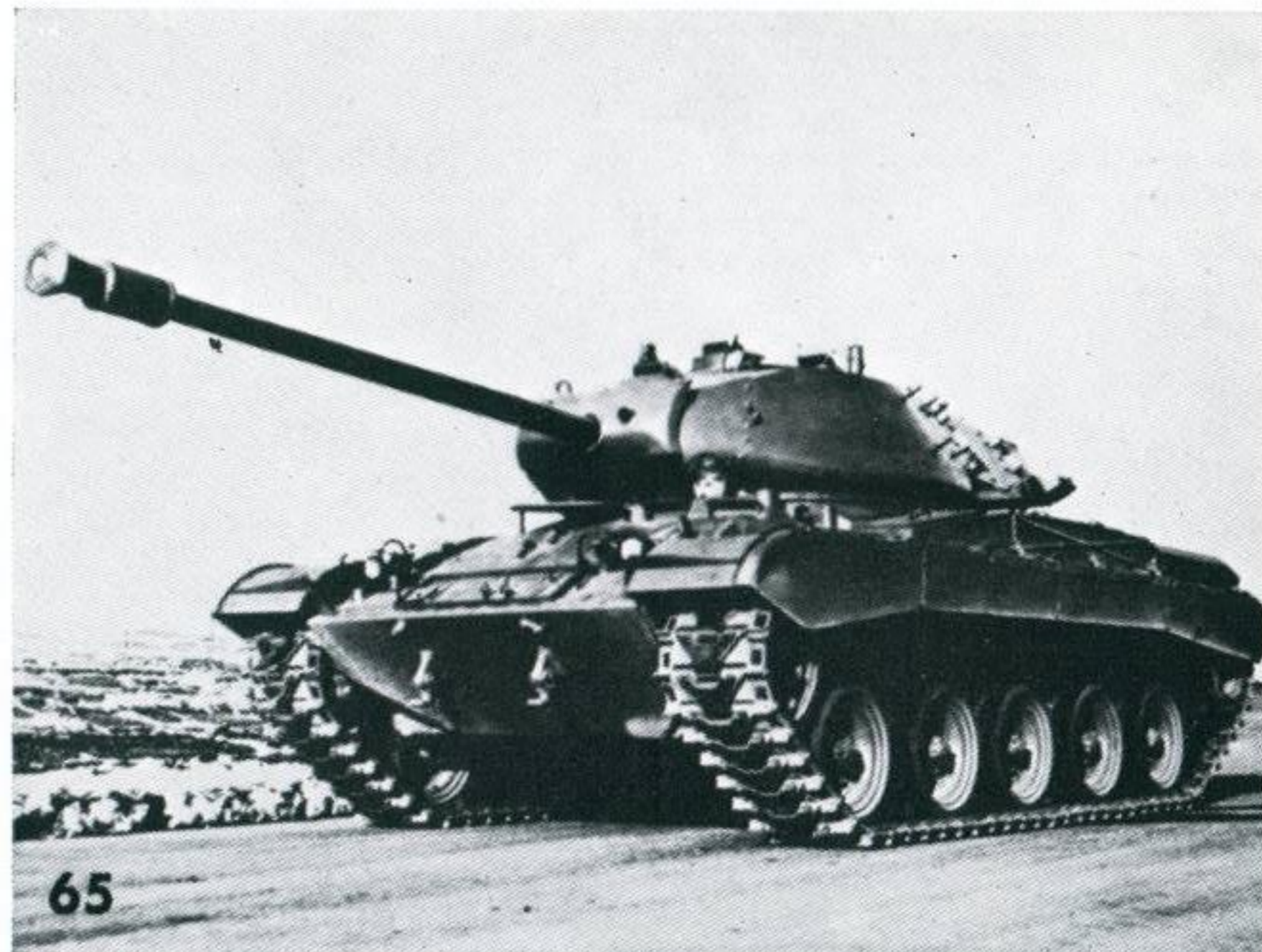




The M41 was built primarily as a reconnaissance tank but it is large enough to be mistaken for a battle tank. In particular, it can be mistaken for the U.S. M47 medium tank, which was the subject of a lesson in the May 1964 issue of the *Journal*, mainly because of the similarity in the appearance of the turrets of the two vehicles. But if

*continued overleaf*

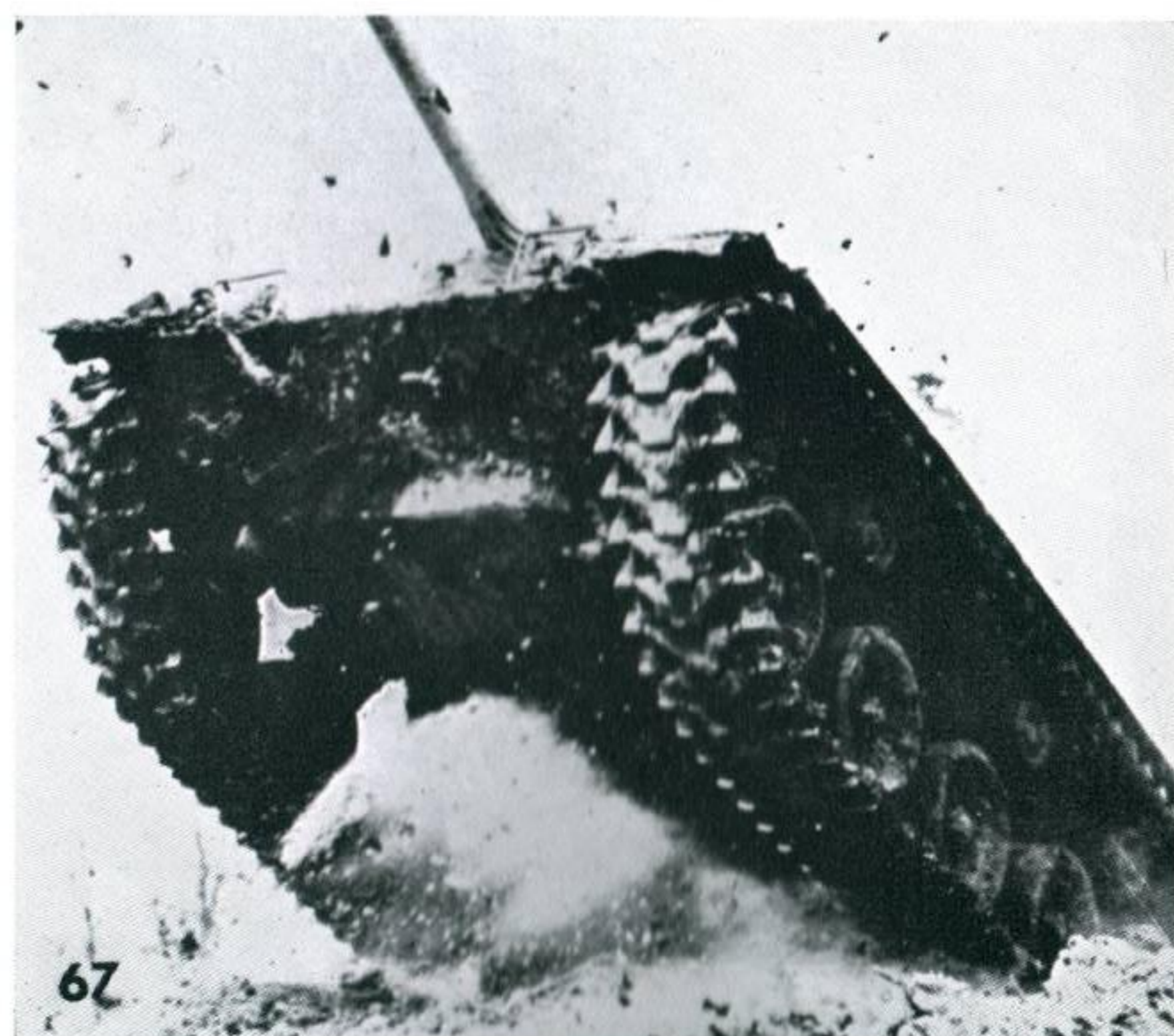




the turrets have similar rear bulges that of the M47 is cast while that of the M41 is welded of rolled plate. A more obvious difference lies in the fact that the M41 has only five road wheels per side whereas the M47 has six. An equally clear difference is in the tracks of the two tanks: the M47 has a double-pin rubber-block type in contrast to the M41 which has a single-pin type with characteristic Y-shaped rubber road pads.

As it is mechanically very sound, the M41 is likely to remain in use for some time to come but in the U.S. Army it is already being replaced by the much more advance M551 Sheridan light tank, which was the subject of a lesson in the March 1968 issue of the *Journal*.

*Lesson instructions are on page 201*





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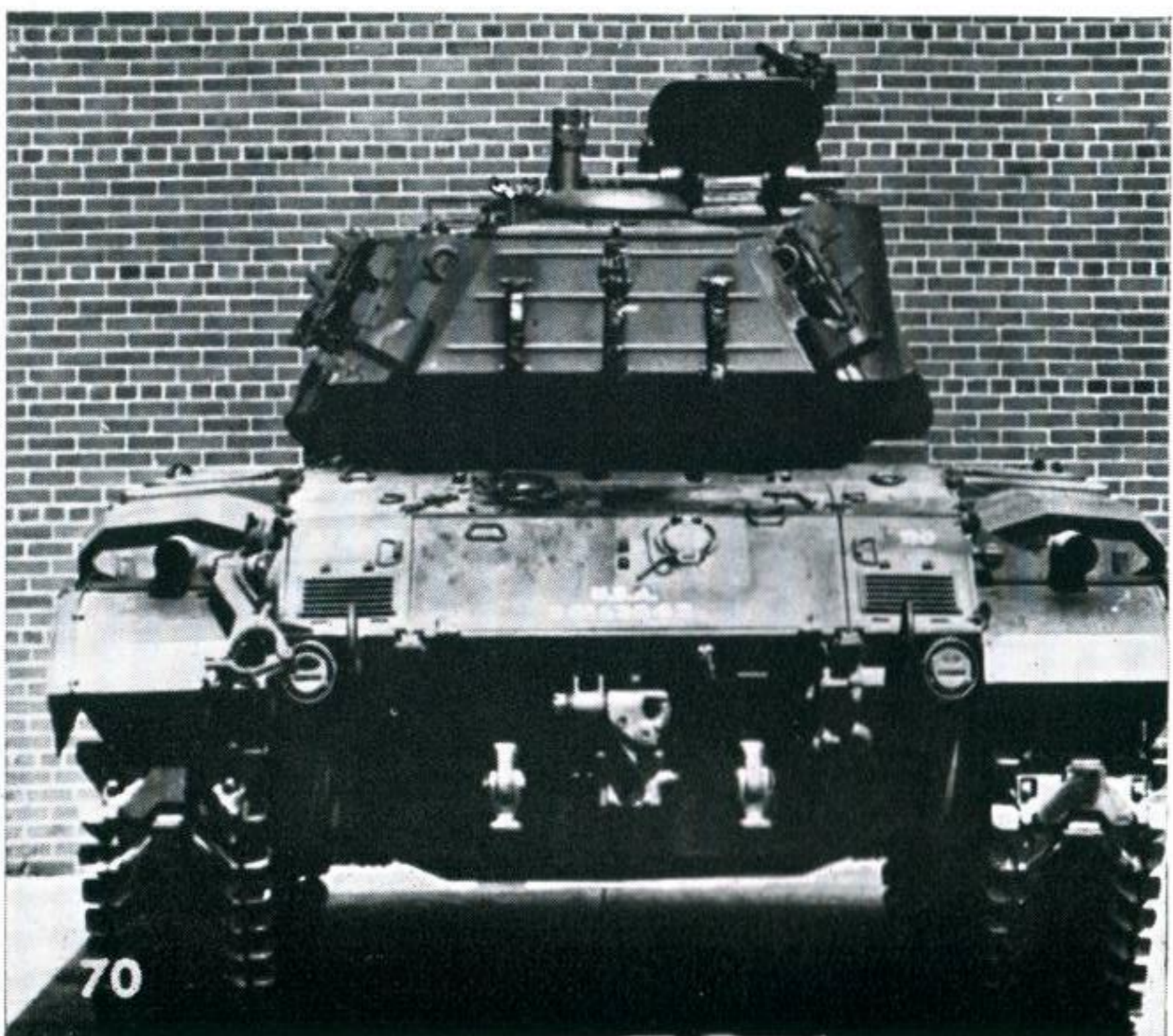
71



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# M41 - U.S. LIGHT TANK

*Solutions on the back cover*



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# AFV SUMMARY

*The following five pages present a summary of the armoured vehicles which were the subject of lessons in the Journal during the past five years. Most of the vehicles are new and did not appear in the AFV Digest published in the August 1959 issue. On the other hand several of the vehicles illustrated nine years ago are still in service but having been presented before they are not shown again in this summary.*

Panhard AML

France



A light armoured car used increasingly widely. Original version with H.E.60 turret carries an unusual armament consisting of a 60-mm. mortar as well as one or two machine guns.



Panhard AML

France

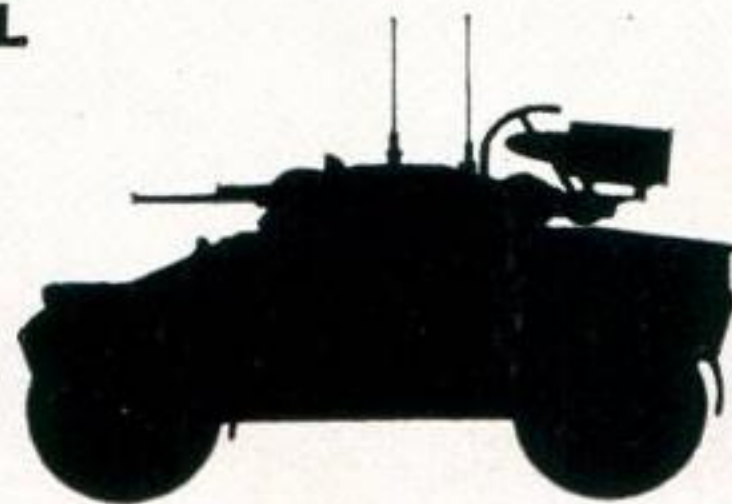


A more heavily armed version of the AML with a H.90 turret mounting a 90-mm. smooth-bore gun which enables it to engage battle tanks and makes it remarkably powerful in relation to its weight of just over five tons.



Panhard AML

France

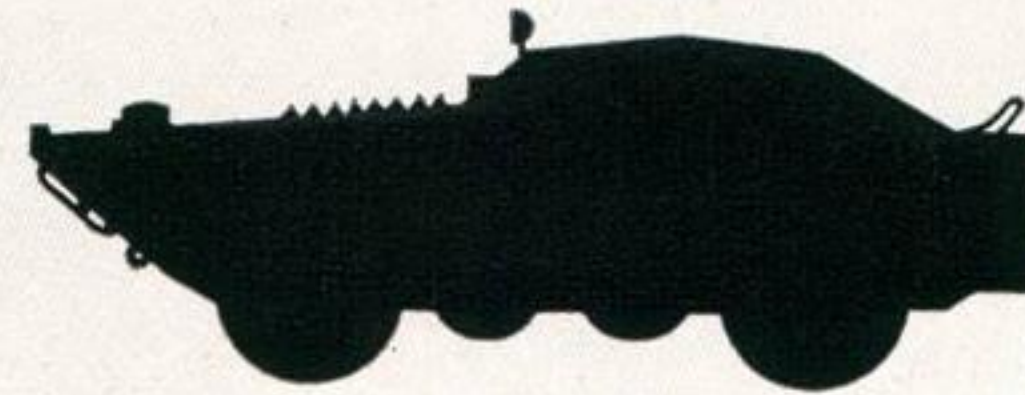


Experimental version of the AML with H.E.60 turret and a launcher carrying four ENTAC anti-tank guided missiles. Like the other two versions of the AML, manned by a crew of three.



BRDM

USSR

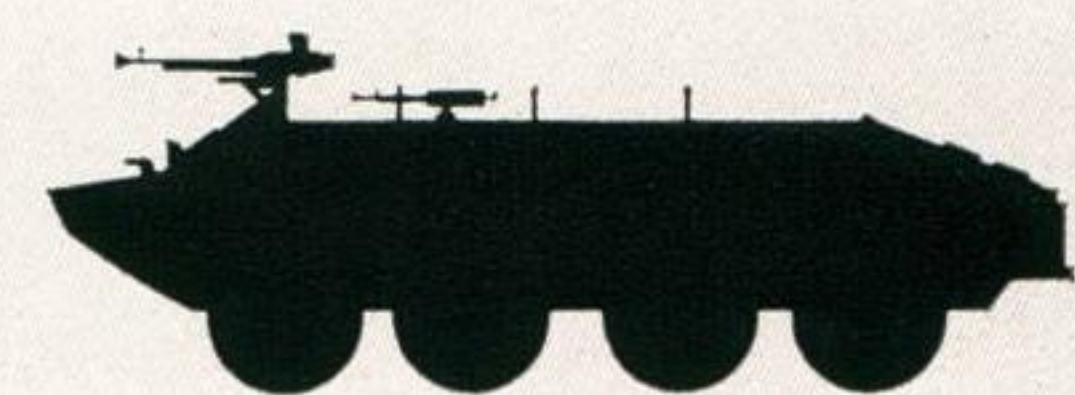


A turretless amphibious armoured car used by Soviet reconnaissance units. In addition to four main wheels has four small auxiliary wheels intended to assist the crossing of obstacles.



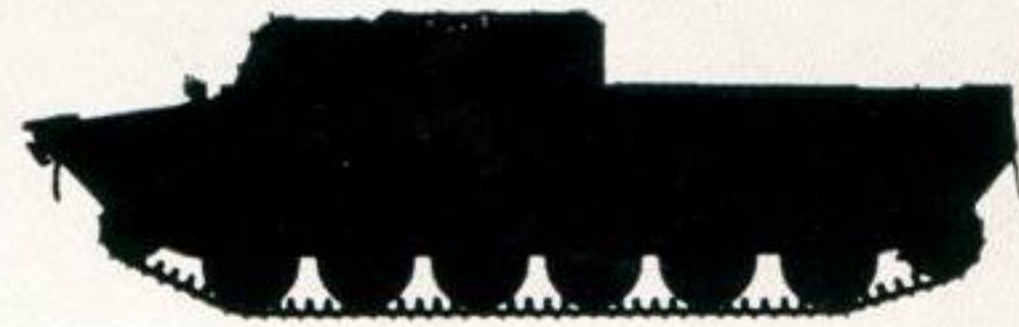
BTR-60 P

USSR

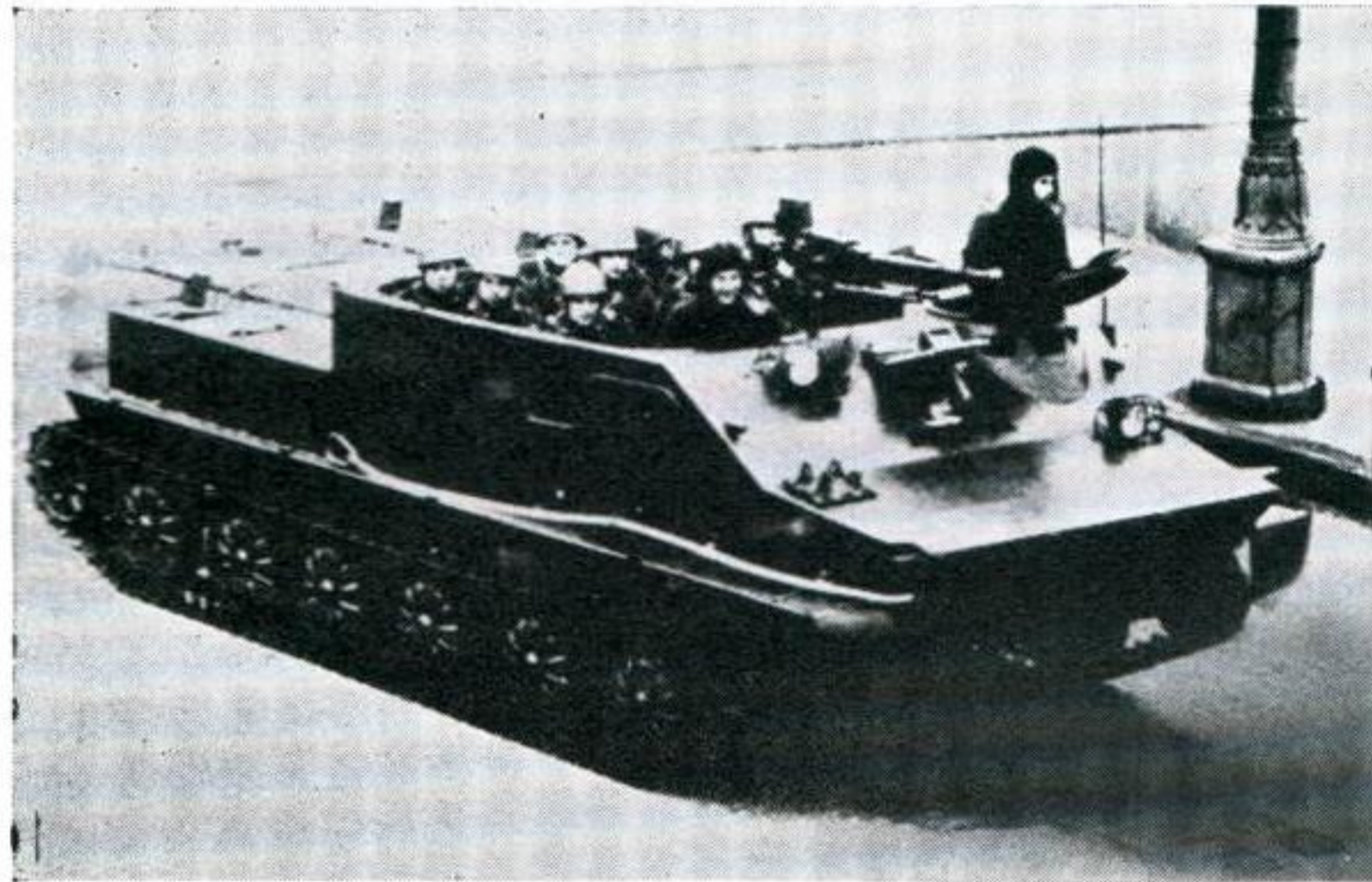
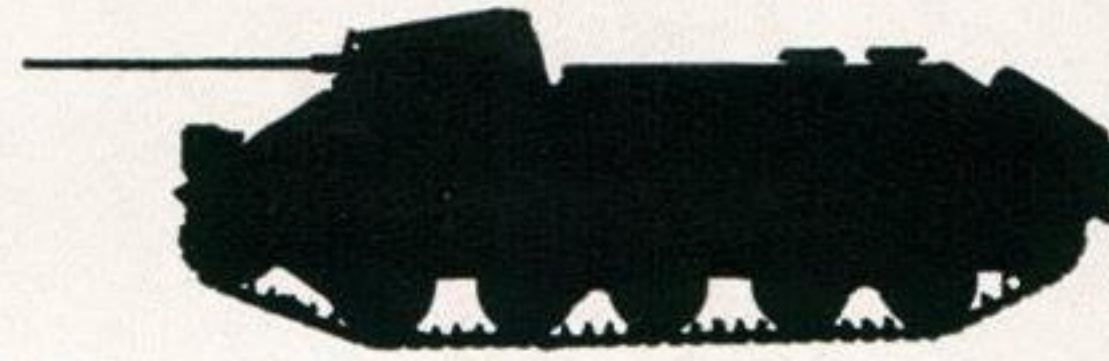


An eight-wheeled amphibious armoured personnel carrier which represents a considerable advance on earlier Soviet wheeled armoured carriers of the BTR-152 type. Later models have overhead protection which is lacking on the early versions.

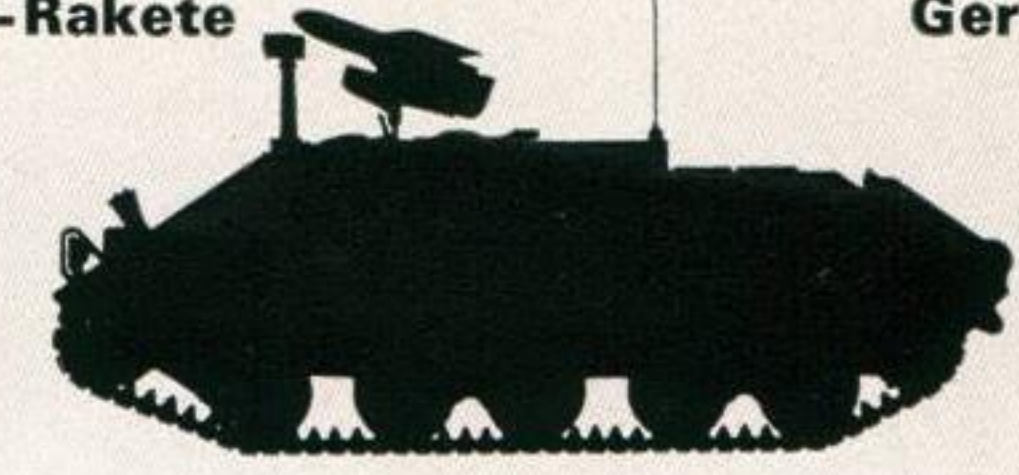


**BTR-50 P****USSR**

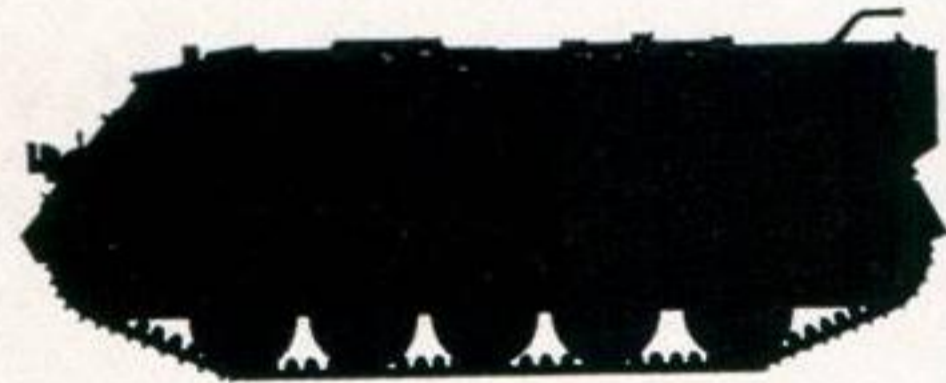
First Soviet tracked armored personnel carrier, based on the chassis of the PT-76 amphibious tank. Used by several Communist countries in different forms, including models with overhead protection not provided on the early models.

**HS-30****Germany**

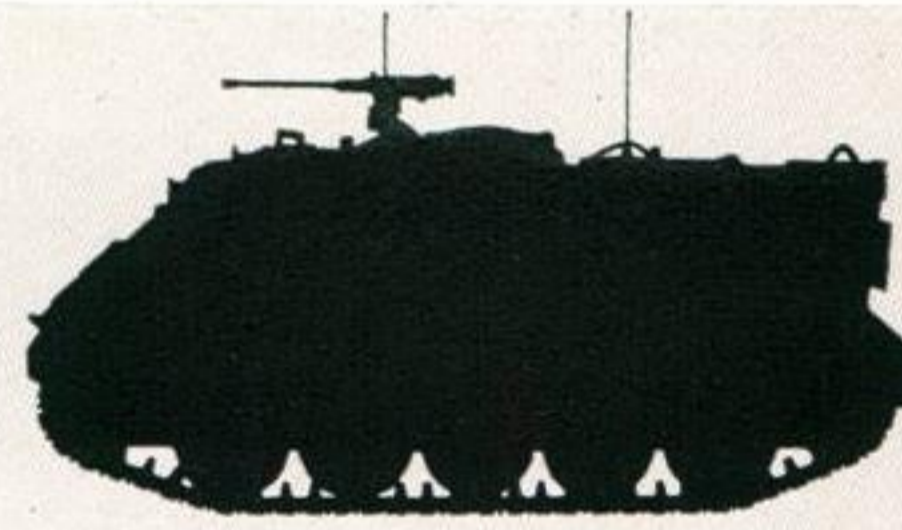
A low-silhouette armored carrier intended for fighting from, on the move, as much as for carrying Panzer Grenadiers for action on foot. Turret mounts a 20-mm. gun but is not fitted to the very similar mortar carrier.

**Jagdpanzer-Rakete****Germany**

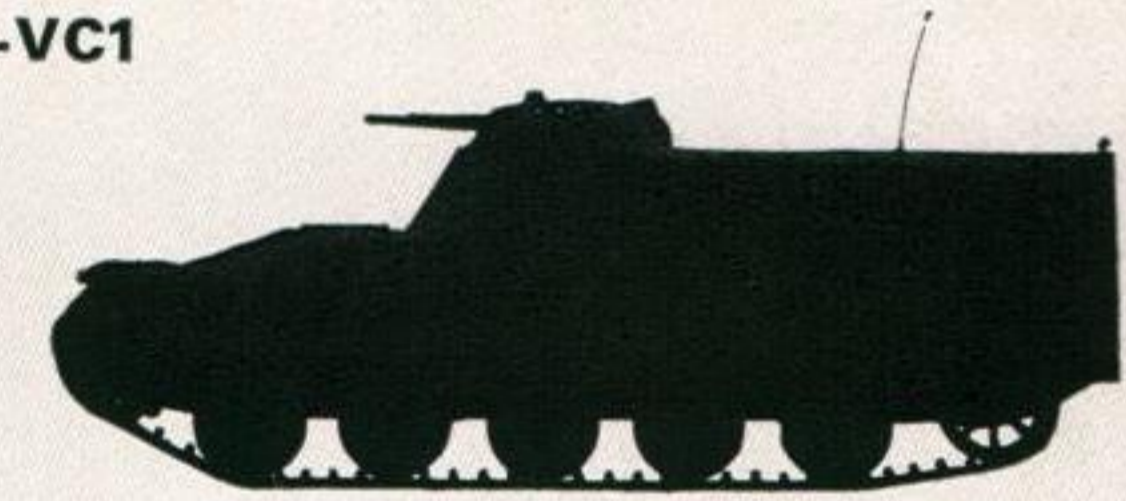
Guided missile tank destroyer similar to the HS-30 armored personnel carrier but with higher superstructure and no turret. Carries SS-11 anti-tank guided missiles which are fired from retractable launchers.

**F.V.432****GB**

Armoured personnel carrier very similar in layout and appearance to the U.S. M113 but heavier and fitted with a collapsible flotation screen. Unlike the M113, it has track return rollers and driver sits on the right.

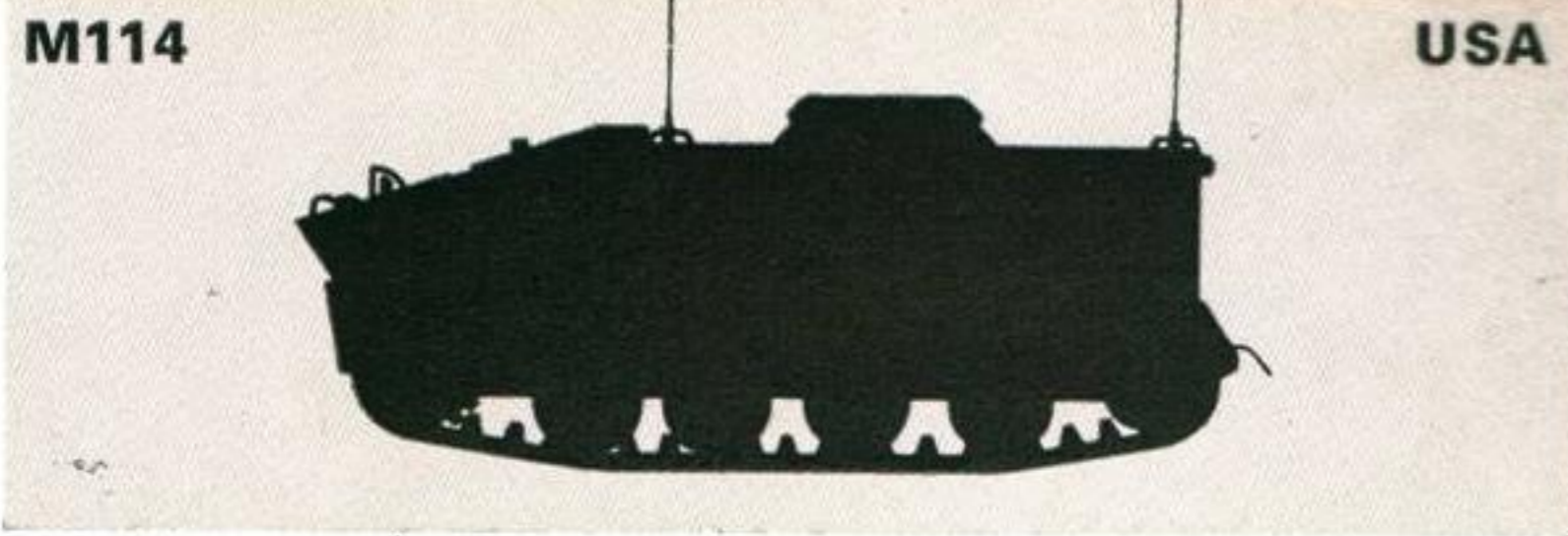
**M113****USA**

Widely used armored personnel carrier and the most numerous armored vehicle outside the Soviet bloc. Characteristic box-like superstructure and can swim across inland water obstacles virtually without preparation.

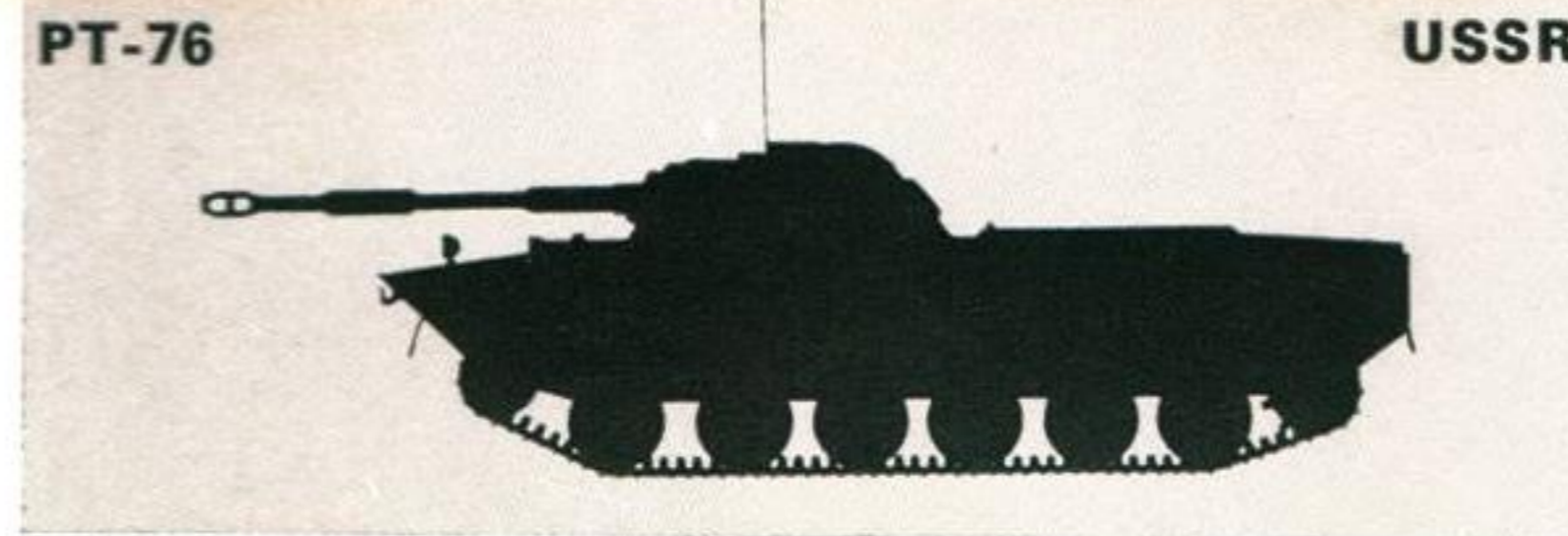
**AMX-VC1****France**

Armoured personnel carrier based on the chassis of the AMX 13 light tank. Unlike the U.S. M113 and the British F.V.432, its crew faces outwards to observe and fire their weapons. Fitted with a small 7.5-mm. machine gun turret.

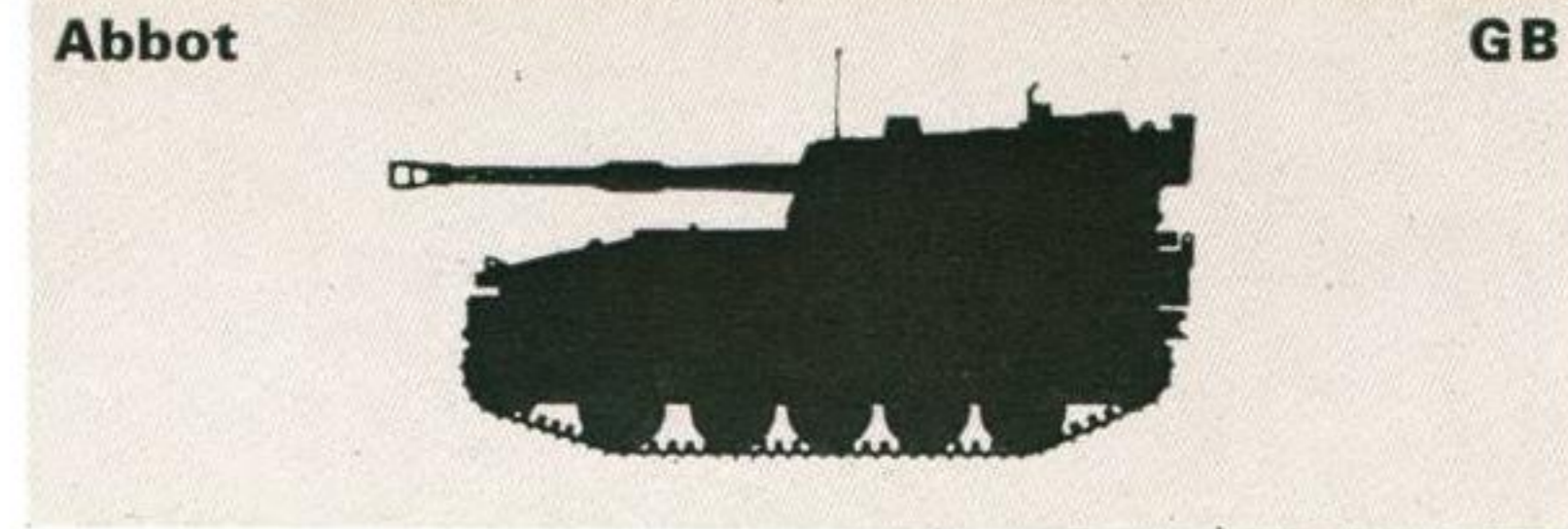




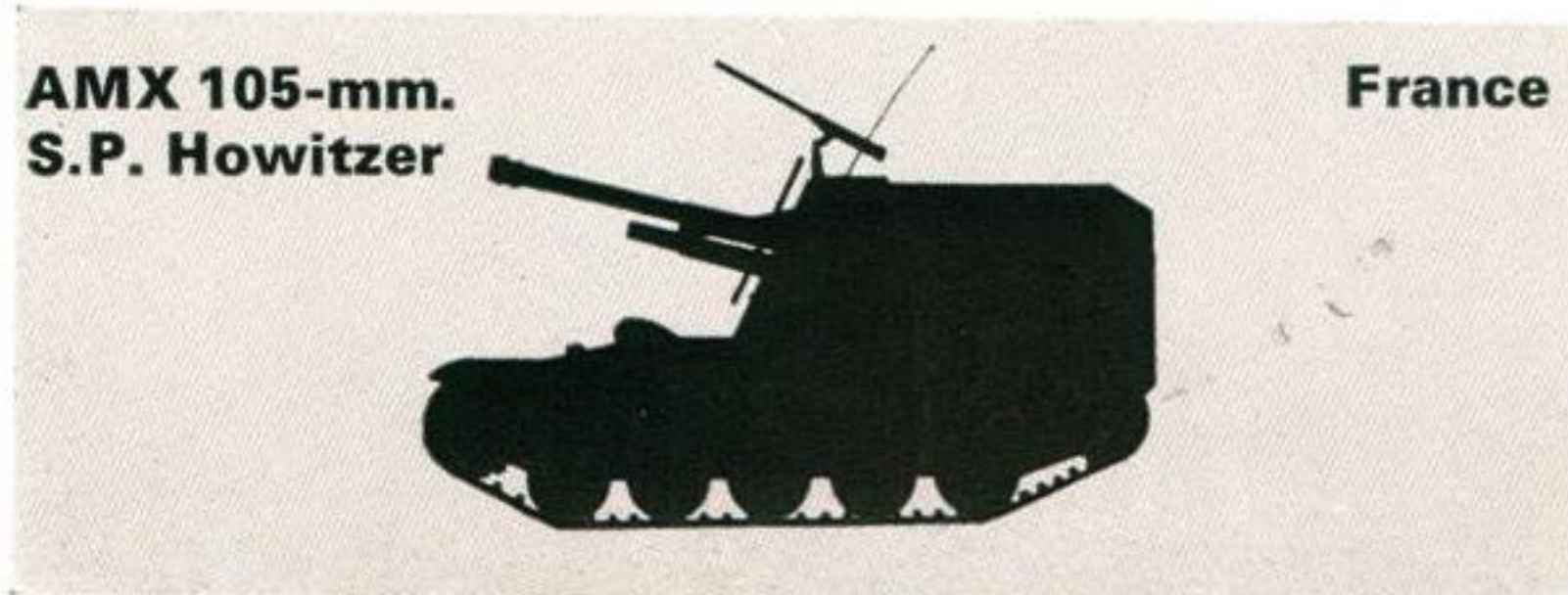
A small armoured carrier somewhat similar to the U.S. M113 armoured personnel carrier but intended for a reconnaissance role rather than carrying infantrymen for dismounted action. Some fitted with a 20-mm. gun.



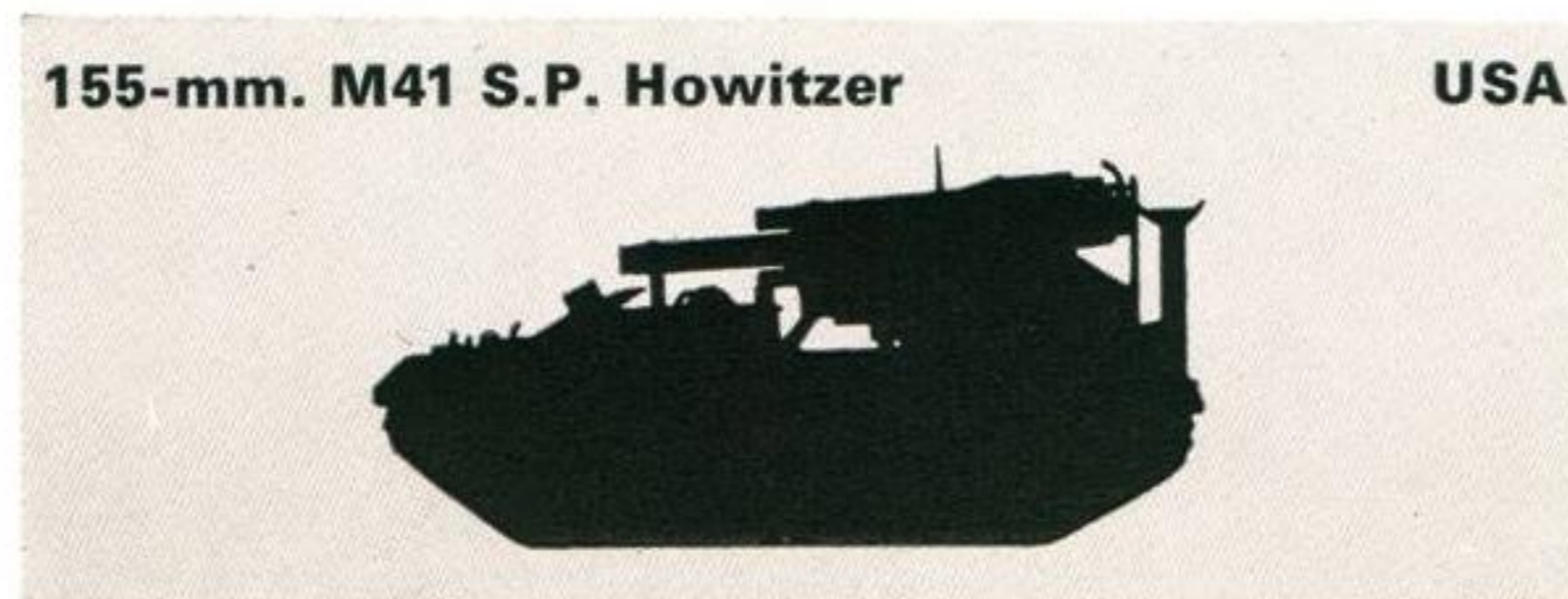
Widely used amphibious reconnaissance tank. Relatively large in relation to its weight and armed with a medium-velocity 76-mm. gun. Swims with the aid of a water jet propulsion unit.



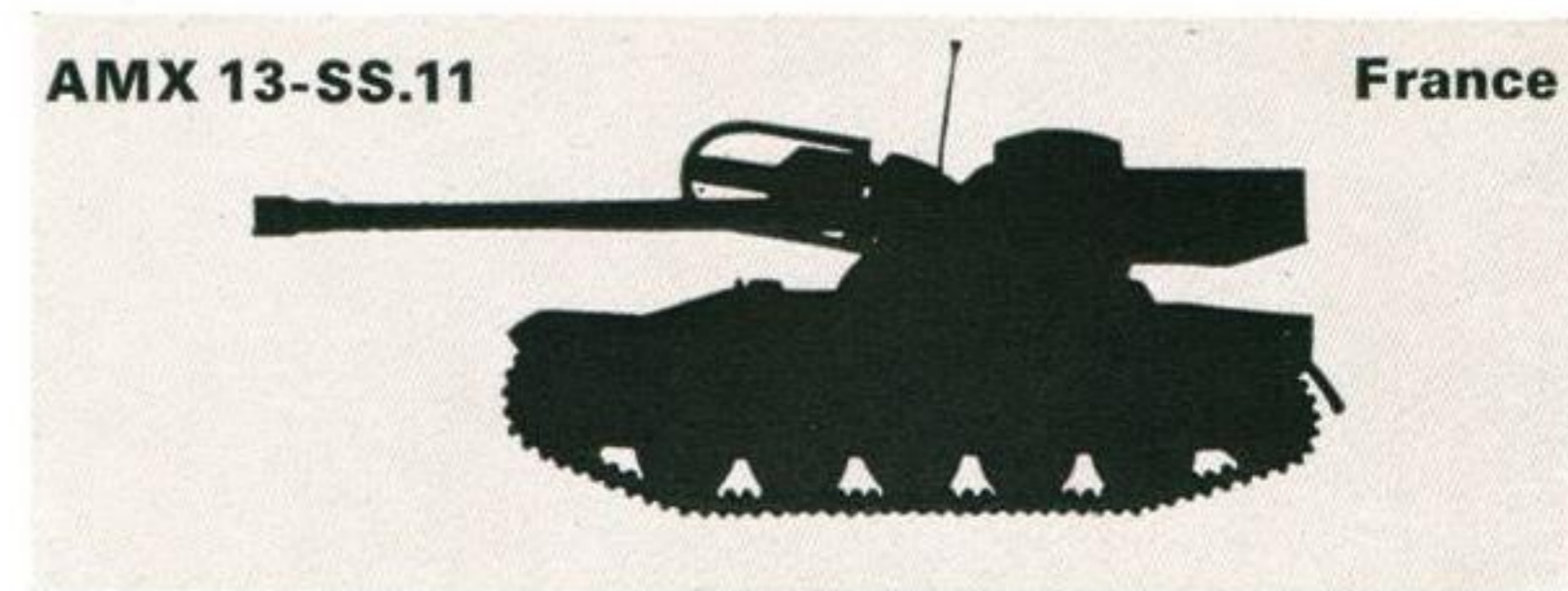
Self-propelled 105-mm. gun with the main armament mounted in a turret with all-round traverse. Chassis similar to that of the F.V.432 armoured personnel carrier and like the latter carries a collapsible flotation screen.



Self-propelled howitzer based on the chassis of the AMX 13 light tank. Succeeded by an improved model, somewhat similar to the Abbot, with gun mounted in a turret with all-round traverse, instead of a fixed superstructure.



Ageing, United States-built 155-mm. self-propelled howitzer still used by the French Army. Chassis similar to that of the U.S. M24 light tank. Offers limited protection to its crew.



AMX 13 fitted with a launch and guidance system for four ENTAC anti-tank guided missiles which converts this light tank into a long-range tank destroyer. Retains the original high-velocity 75-mm. gun for engaging targets at shorter ranges.

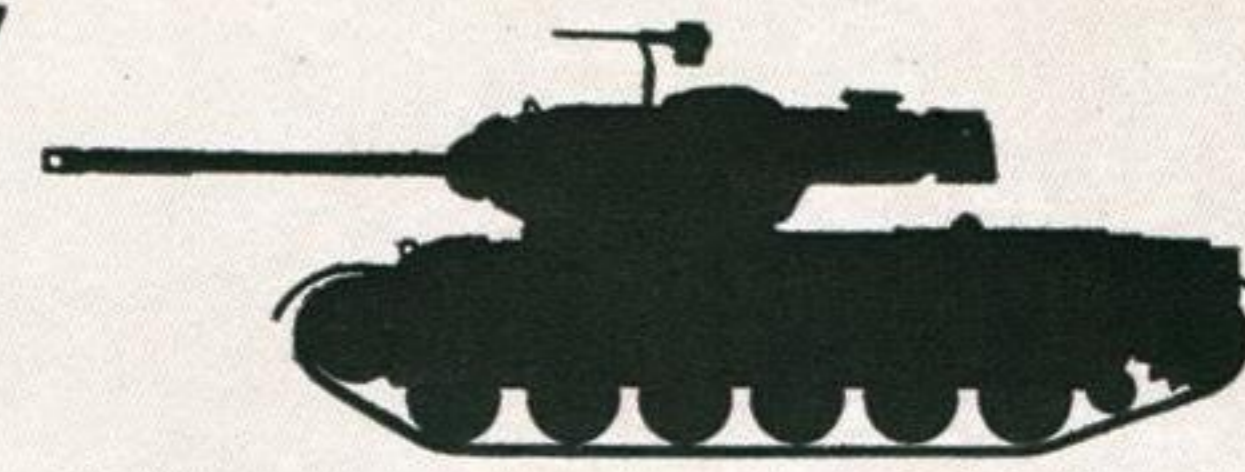


**S-tank****Sweden**

Controversial turretless battle tank with its 105-mm. gun fixed in relation to the hull. The gun is elevated or depressed by altering the pitch of the hull and traversed by turning the vehicle. A crew of three but can be operated by one man.

**Vickers 37-ton tank****GB**

Somewhat similar to the Centurion but considerably lighter and more mobile. Same engine and transmission as the Chieftain. Produced in India, under licence, as the Vijayanta.

**M47****USA**

Medium tank no longer used by the U.S. Army but still in service with several European and other armies. Some M47 tanks have been rearmed with a 105-mm. gun in place of the original 90-mm. gun. Last U.S. medium tank with a hull machine gunner.

**M60A1****USA**

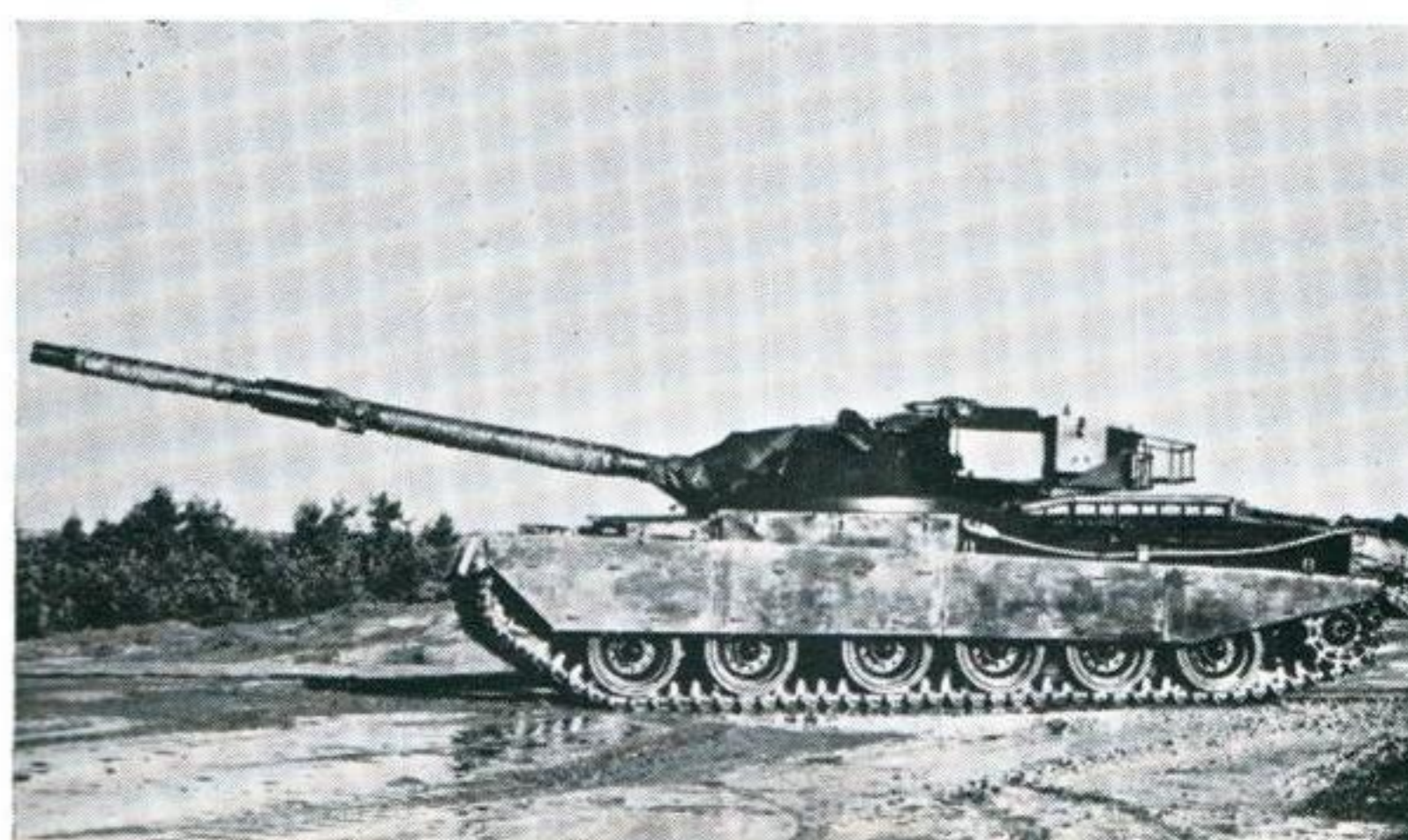
Current U.S. Army battle tank with 105-mm. gun (as Centurion). The original M60 is similar to the earlier M48 tanks but the M60A1 has a new turret. The latest M60A1E1 has yet another turret and a 152-mm. gun/launcher.

**M103****USA**

Produced in limited quantity more than ten years ago, this heavy, 120-mm. gun tank is now used only by the U.S. Marine Corps. Its external characteristics include a large cast turret and seven road wheels per side.

**Chieftain****GB**

The most heavily armed and the most heavily armoured of the current generation of battle tanks. Has a relatively low silhouette and a well profiled turret mounting a 120-mm. gun with bagged-charge ammunition.



Centurion

GB



Although its design was started 25 years ago, it is still a widely used and very effective battle tank due mainly to being rearmed with a 105-mm. gun instead of the original 76.2-mm. and the later 83.4-mm. guns.



AMX-30

France



One of the lightest of the current generation of battle tanks. Armed with a French-designed 105-mm. gun which fires an ingenious type of anti-tank projectile with a shaped charge mounted in ball bearings to reduce its spin.



Leopard

Germany



A long, low-silhouette battle tank armed with the same British designed 105-mm. gun as the Centurion, U.S. M60, Vickers 37-ton tank and the Swiss PZ.61. Like the AMX-30, it has a high power-to-weight ratio of 20 b.h.p. per ton.



T-54

USSR



Together with its much refined successor, the T-55, this is still the main battle tank of the countries of the Communist bloc. Armed with a 100-mm. gun mounted in a characteristic hemispherical turret.



T-62

USSR



Latest Soviet battle tank. In the Soviet Army it has already partly replaced the T-54 and T-55, which it resembles. It is, however, somewhat larger and heavier than its predecessors and it is armed with a 115-mm. gun.



T-10

USSR



A heavy Soviet tank armed with a 122-mm. gun. It resembles the earlier IS-3 (Stalin) tank but it is larger and heavier and, in turn, it is being withdrawn from service.



## BOOK REVIEW

**Design and Development of Fighting Vehicles.** By R. M. Ogorkiewicz. Published by MacDonald & Co. at 50/-. Illustrated.

Tanks are up and coming. By that I don't mean that war is imminent or that everyone will be wanting to own his own tank—perish the thought—and indeed, road conditions. What I mean is that interest is widening in the subject of armoured vehicles amongst the general public in this technological age quite apart from the natural interest of the Services, and that this book may well grace more bookshelves today than might have been so a few years back.

The author of this book explains the tank as basically a mobile weapon platform: something which military commanders and others have dreamed of from earliest times, and in their own ways have sometimes achieved, but, to us, in rather rudimentary ways. At the other end of the timescale the author discusses tanks in the nuclear era.

The book is arranged in easily digested chapters which include separate ones on turret and hull design: steering arrangements: weapons: there is another chapter on the other

necessary components of a tank. The author is an engineer of distinction and consequently the book a text book but not so much as to baffle the layman. Indeed, if you are interested in motor cars you will find a great deal to interest you in this book.

So far as Identity training is concerned, the data to be found in this book is not entirely relevant. That is not to say however that those who need to learn to identify tanks will not perhaps, develop a thirst for the kind of knowledge that this book contains. Indeed, many who have to learn to identify these "beasts of the field" may need to know more than we convey in our *Journal*. If there is a thirst for technical knowledge of tanks this book will certainly help to quench it.

I am not one that normally enjoys grouping of photographs at the end of a book but in this case it is good practice. The vehicles are arranged historically regardless of nationality and comparisons of contemporary vehicles are easily possible. This doubles interest. No book I have seen has ever been so comprehensive of tank history and development and there is no doubt that its scope and calibre will ensure a wide readership.

C.E.S.



*Variants of armoured vehicle types are almost as numerous as in aircraft and ships. Here is a variant of a well known one in which the chassis characteristics will be well recognisable if you have carried out your training correctly. If you haven't, this will be just another heap of metal called a tank. If you turn back to page 199 you will get some guidance. Do that before you look up the answer on the cover. Variants in vehicles of the same type usually call for little additional training if they bear unmistakable family characteristics such as this one.*



# ASU-85

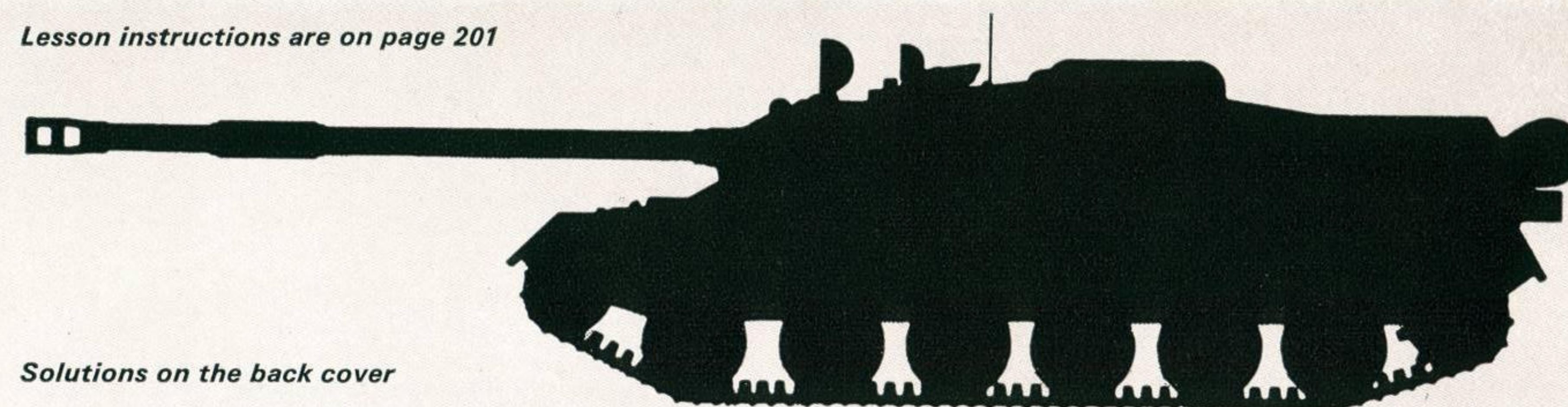
SOVIET  
AIR-TRANSPORTABLE  
S.P. ANTI-TANK GUN

Turretless assault guns are no longer as important or as numerous an item of Soviet armoured equipment as they were towards the end of the Second World War and for many years afterwards. The ASU-85 represents, however, at least one new vehicle of this type. In particular, it represents a continuation of the turretless tank destroyer or self-propelled anti-tank gun, the best known example of which has been the SU-100.

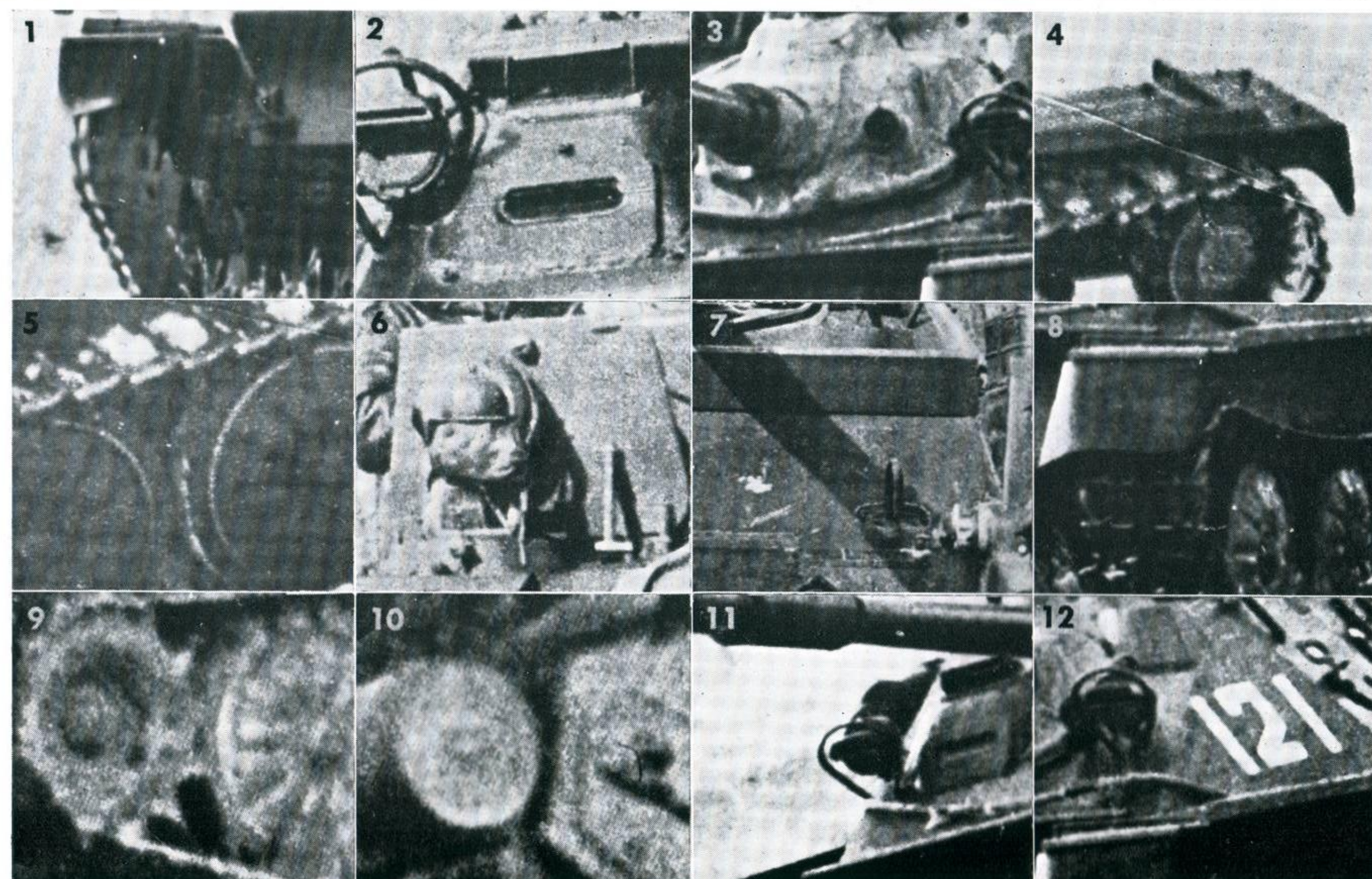
By comparison with the SU-100, and most of the earlier vehicles of the SU-type the ASU-85 is much lighter, being designed primarily for use by Soviet airborne formations. It is, however,

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*Lesson instructions are on page 201*

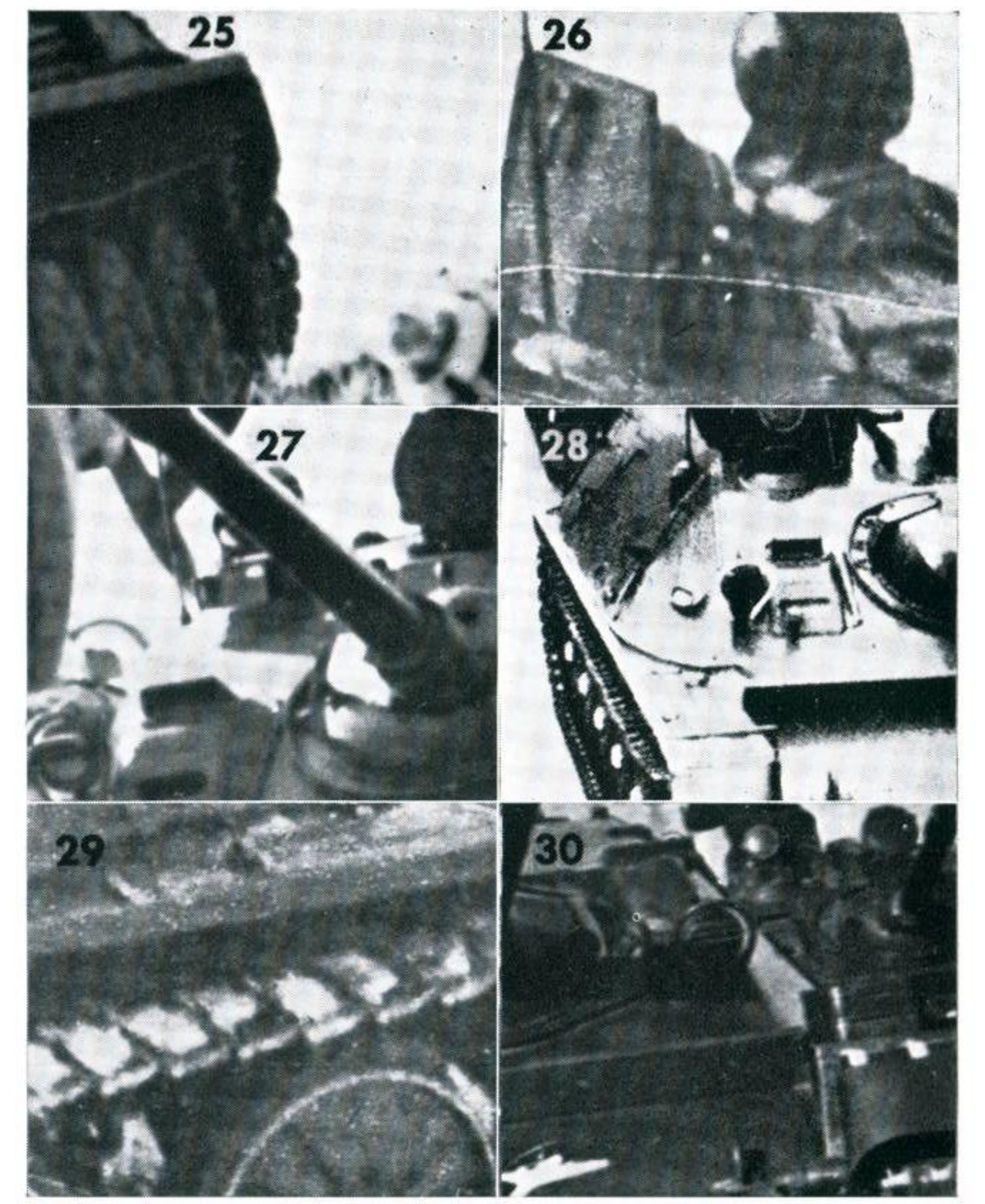
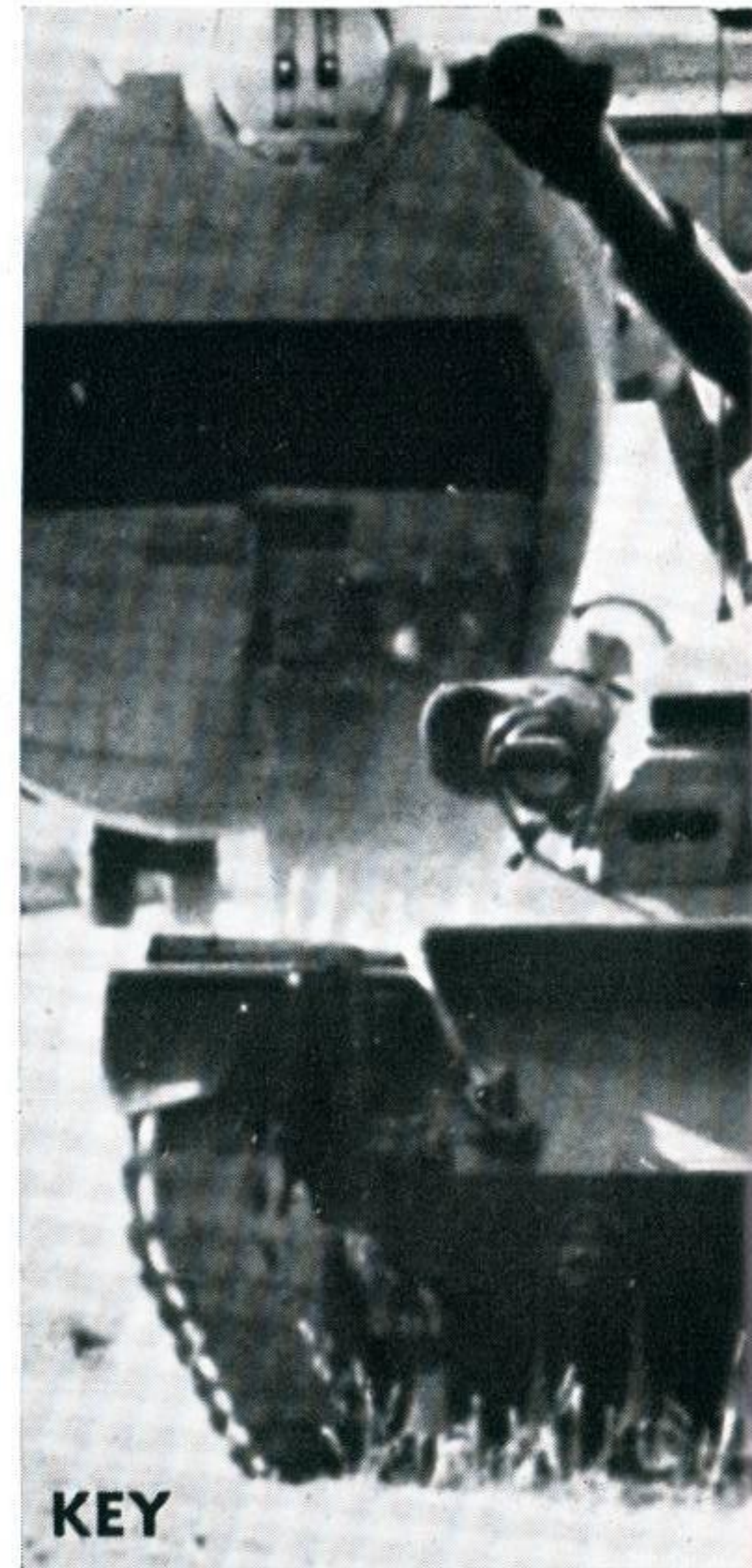


*Solutions on the back cover*

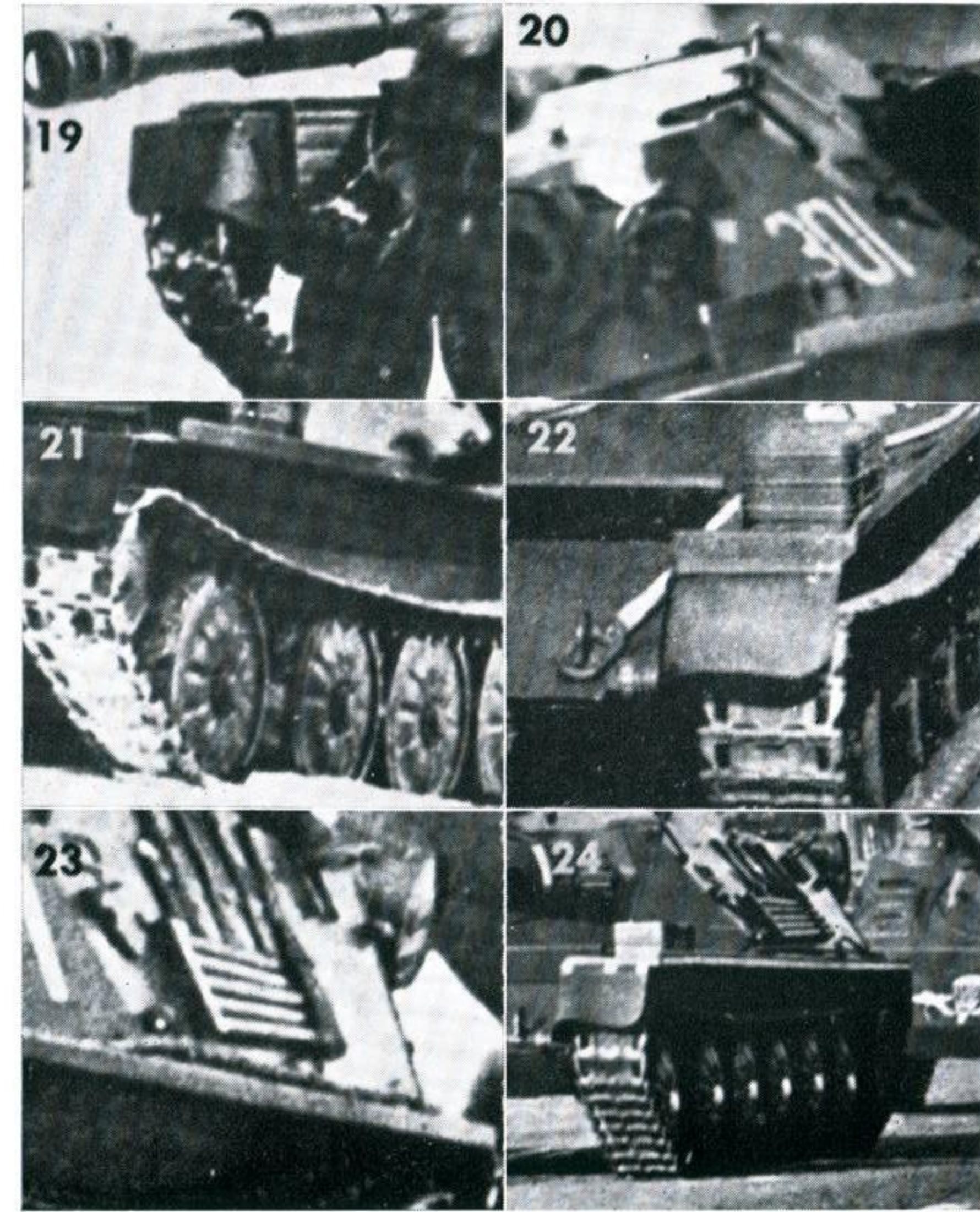


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# ASU-85

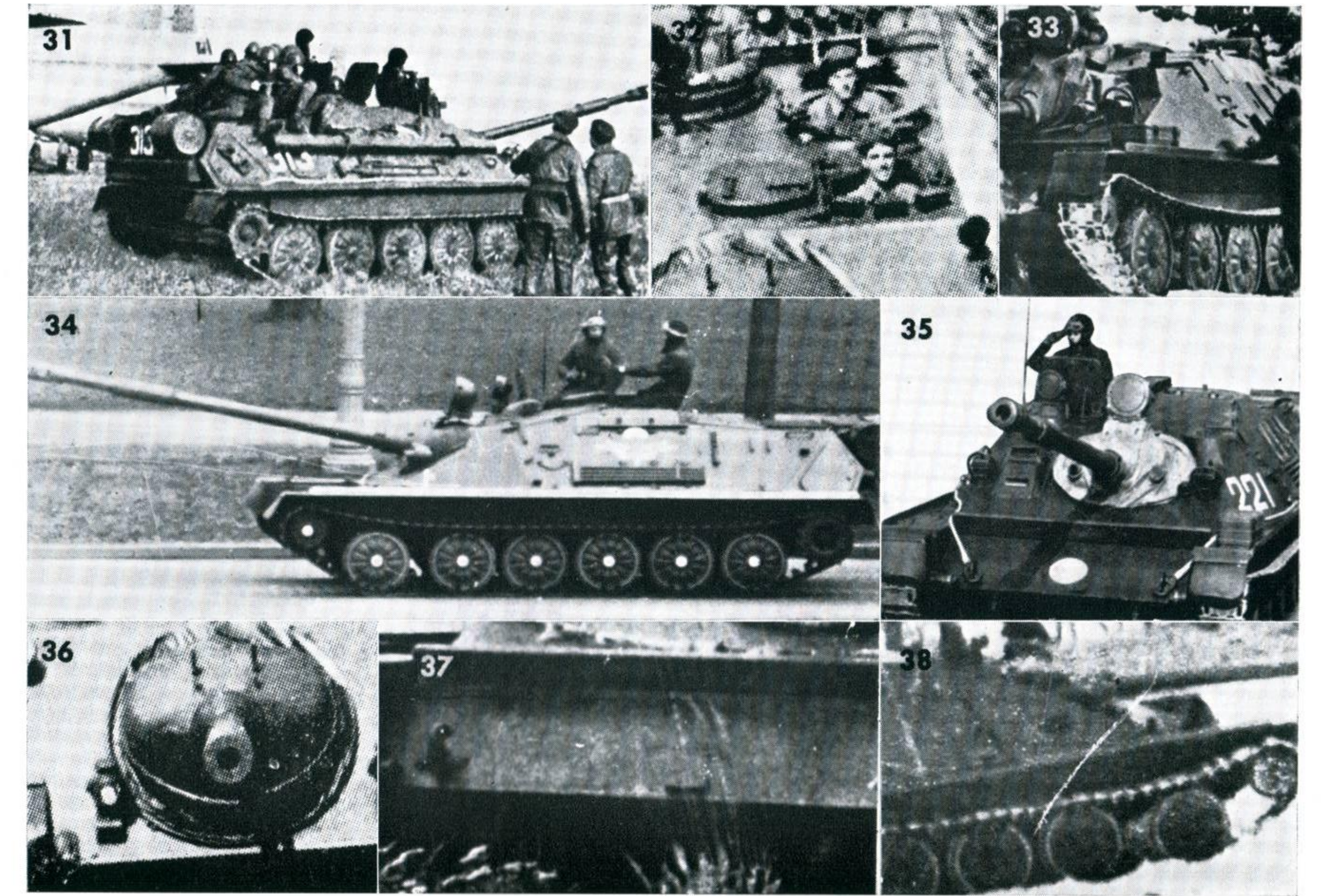


heavier than the original self-propelled anti-tank gun of the Soviet airborne forces, the ASU-57. It is also more heavily armed, having a high-velocity 85-mm. gun whereas the ASU-57 is only armed with a 57-mm. gun. As a result, the ASU-85 has to be landed by transport aircraft while the ASU-57 is light enough to be dropped into action by parachute.

Mechanically the ASU-85 is related to the PT-76 amphibious reconnaissance tank, the most recent lesson on which appeared in the December 1967 issue of the *Journal*. In particular, it has the same type of running gear as the PT-76 with six road wheels per side and no return rollers.



Lesson instructions are on page 201 Solutions on the back cover





# U.S. M48A2 medium tank

The U.S. M48A2 medium tank was first described in the December 1956 issue of the *Journal*. But, almost twelve years later, it is still going strong. For instance, it is being used by the U.S. Army in Viet Nam. It is also in service with several other armies and is likely to remain in use for some time to come, if only in a modified form.

The principal external difference between the M48A2 and the earlier tanks of the series, the M48 and the M48A1, is in the enlarged engine compartment which is higher as well as having a large grill at the rear. Like the two earlier

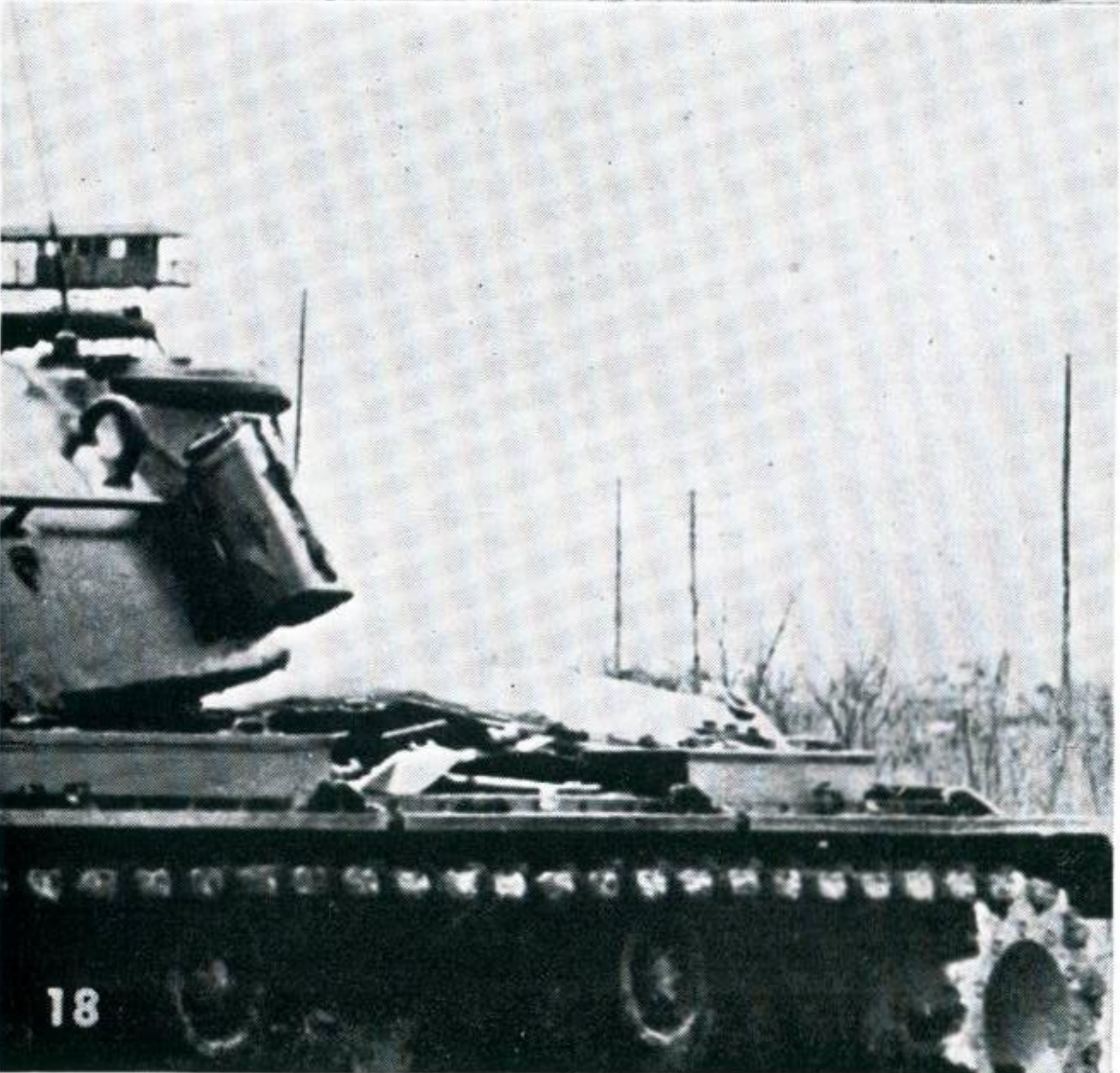
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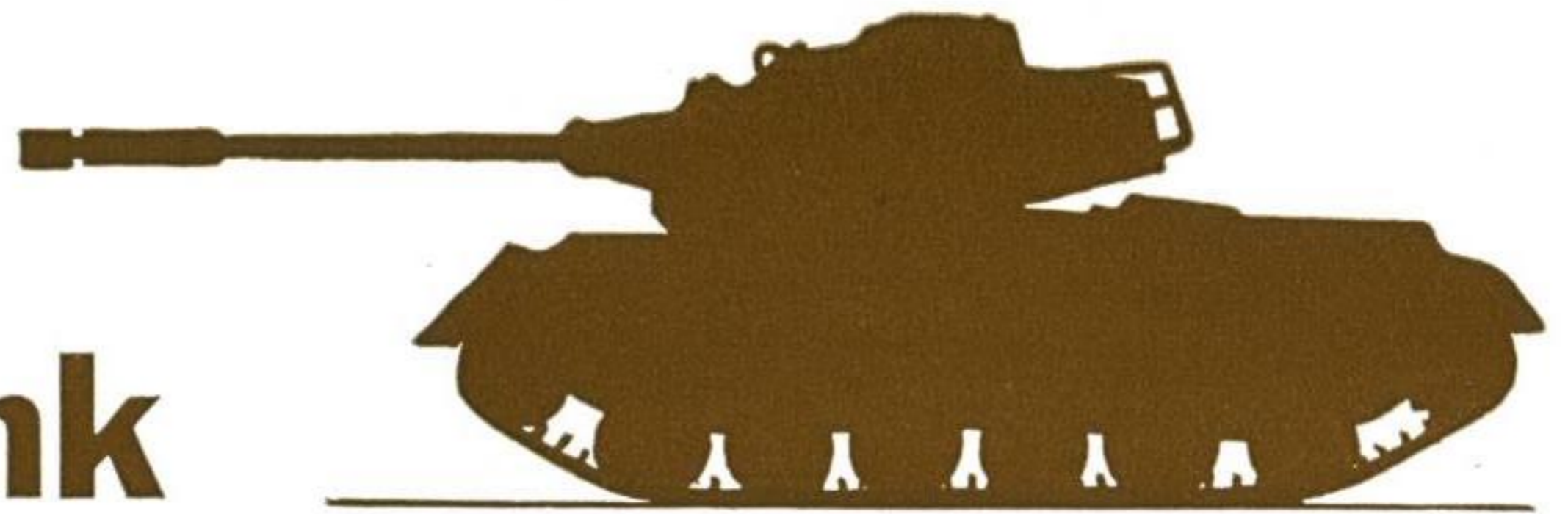




*Lesson instructions are on page 201 Solutions are on the back cover*



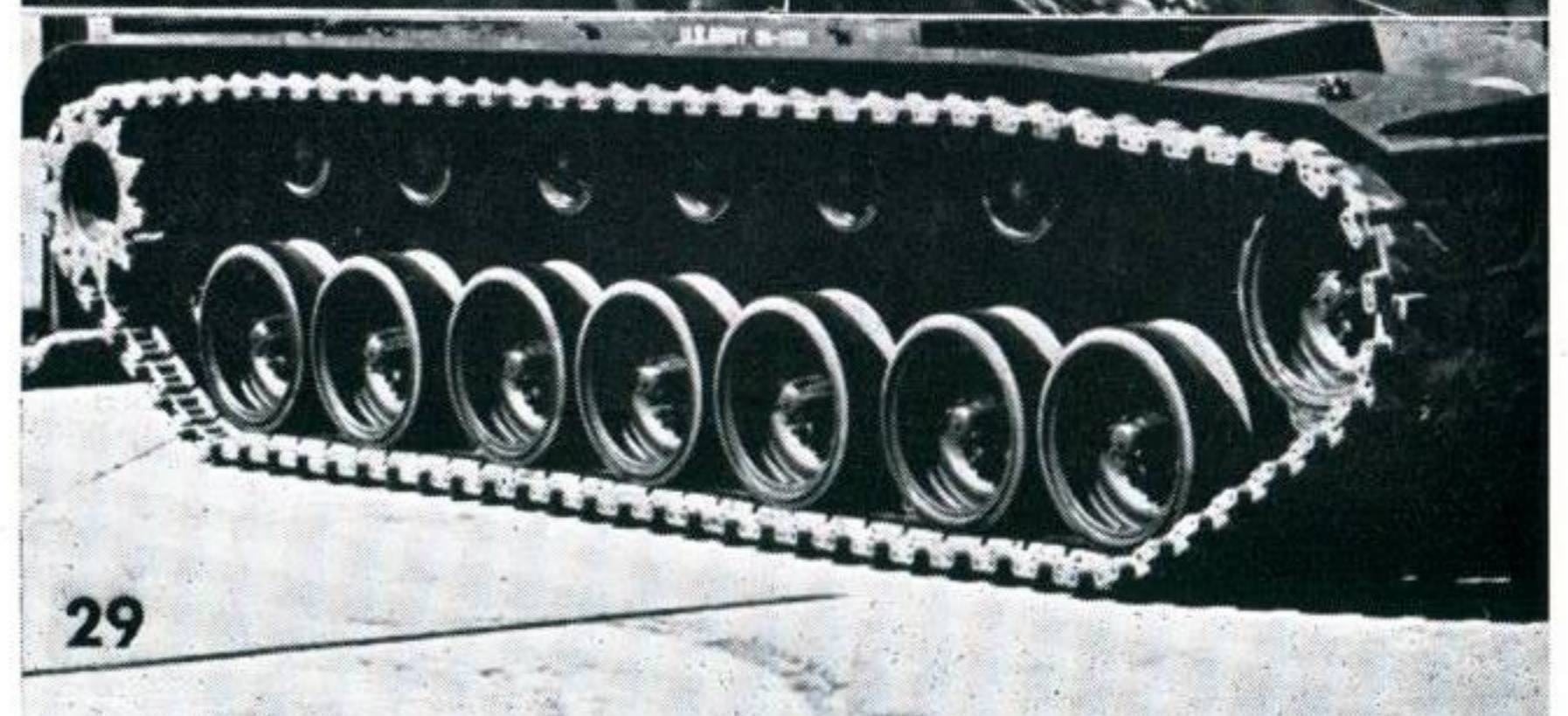
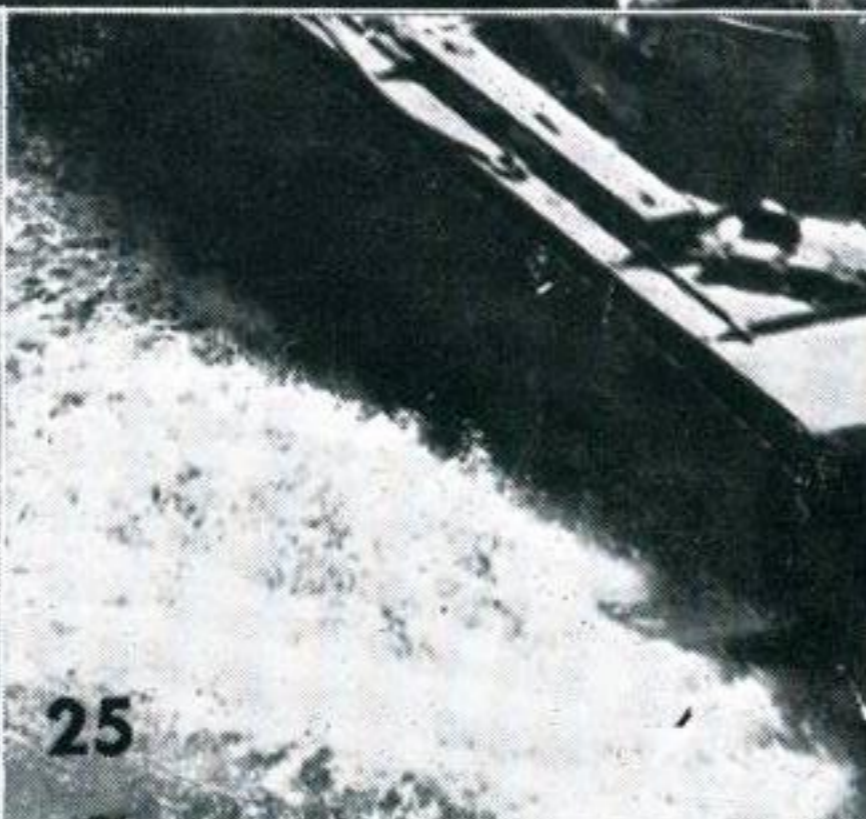
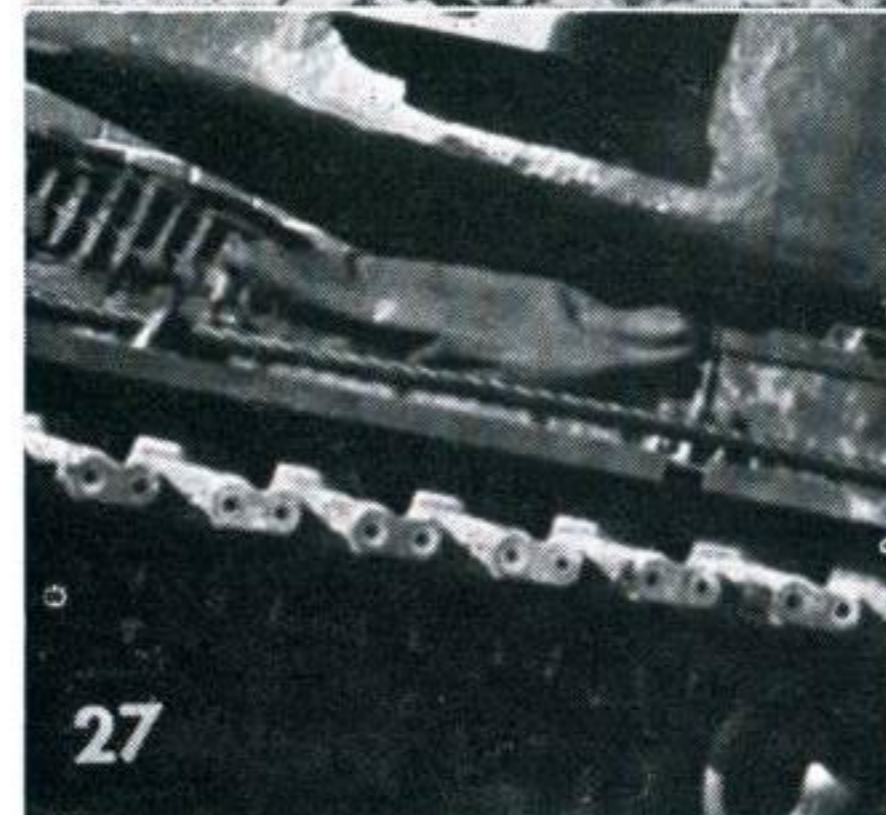
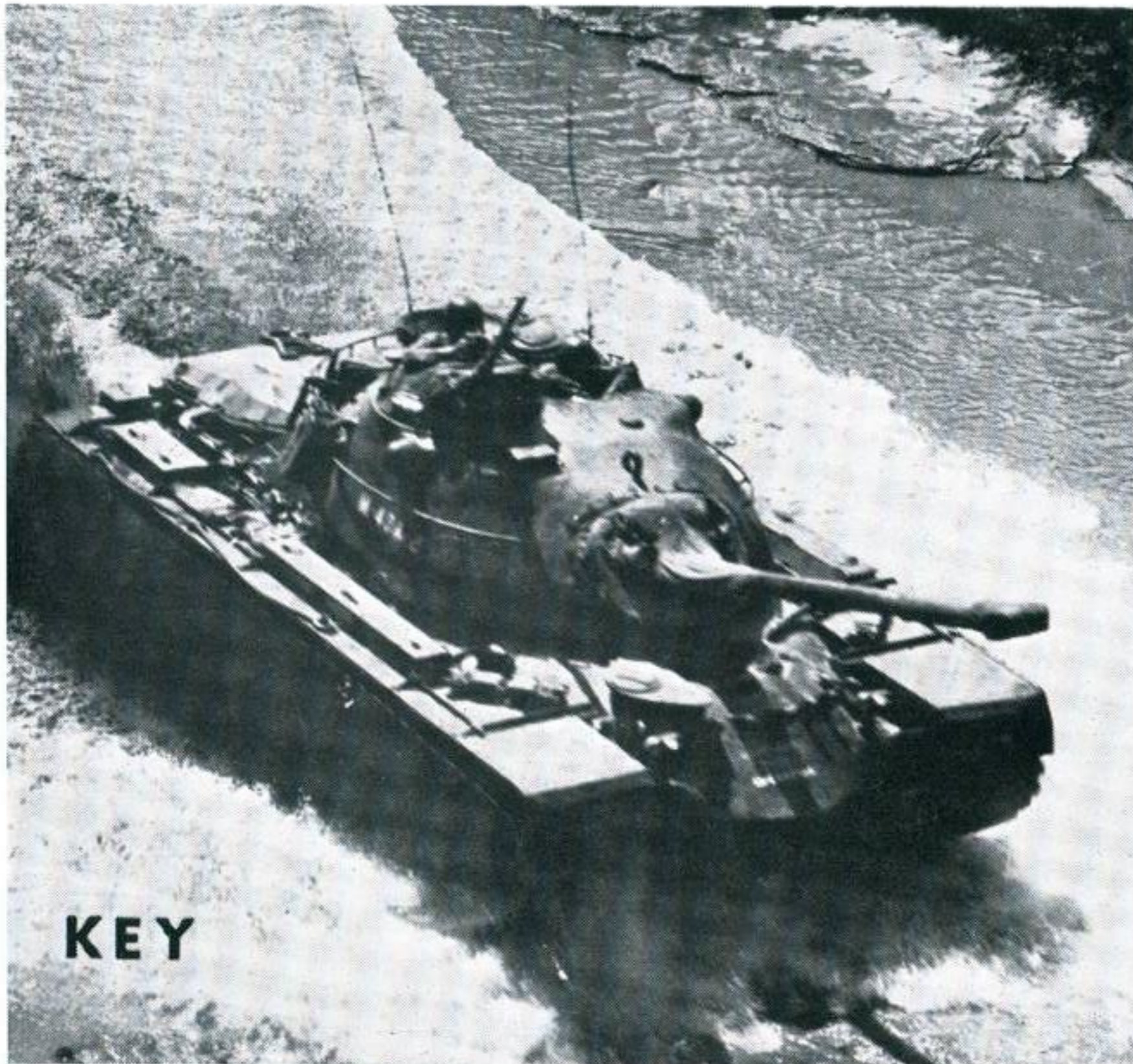
# M48A2 medium tank

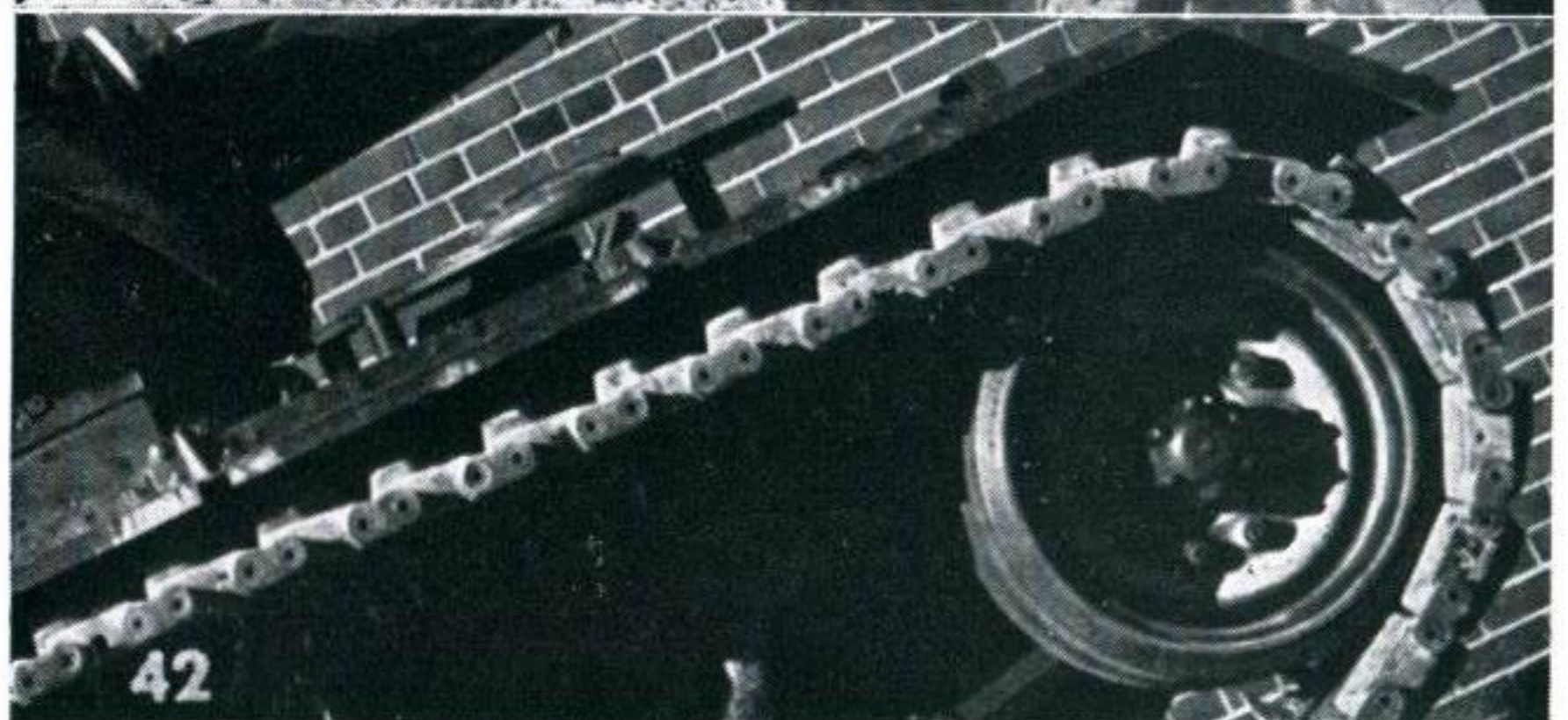
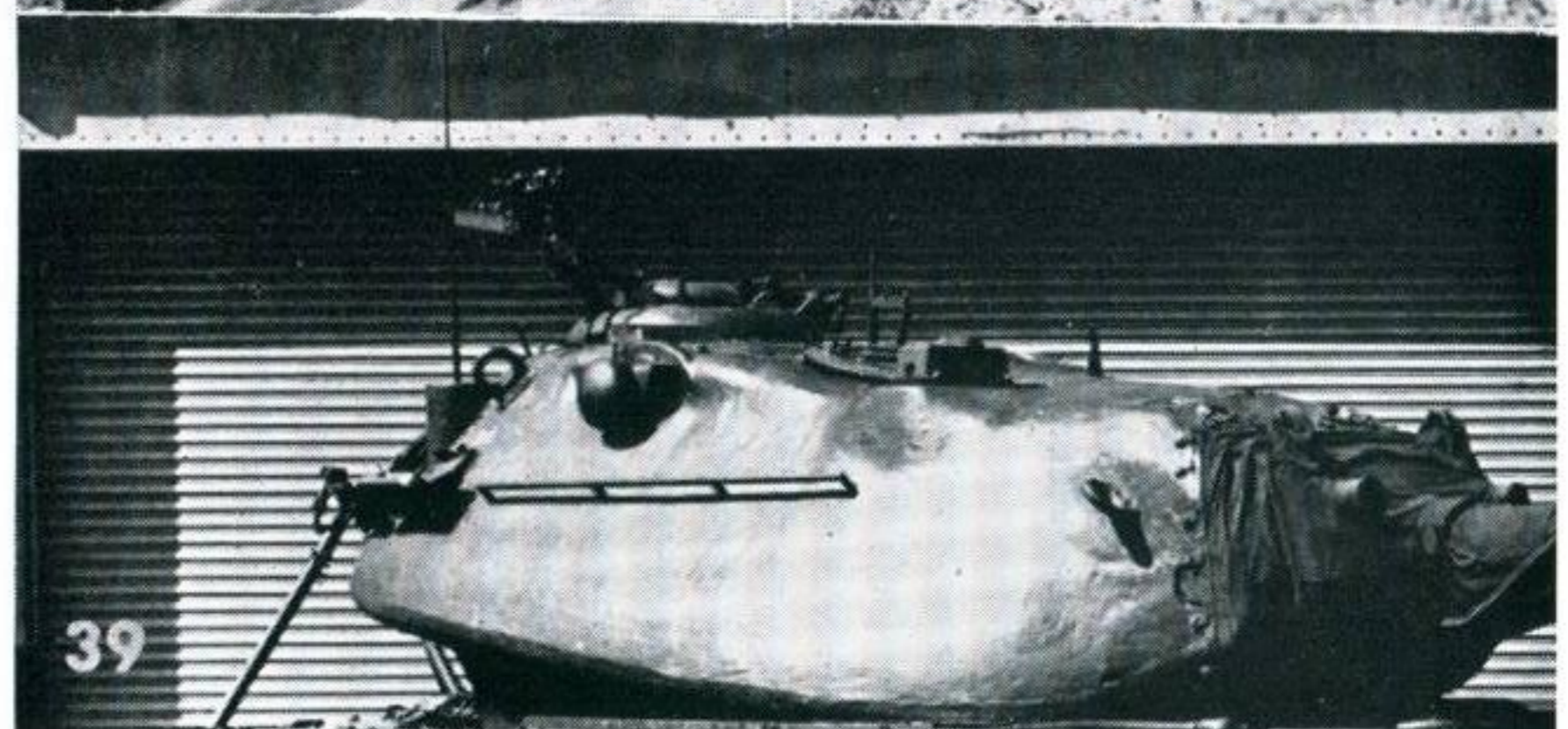
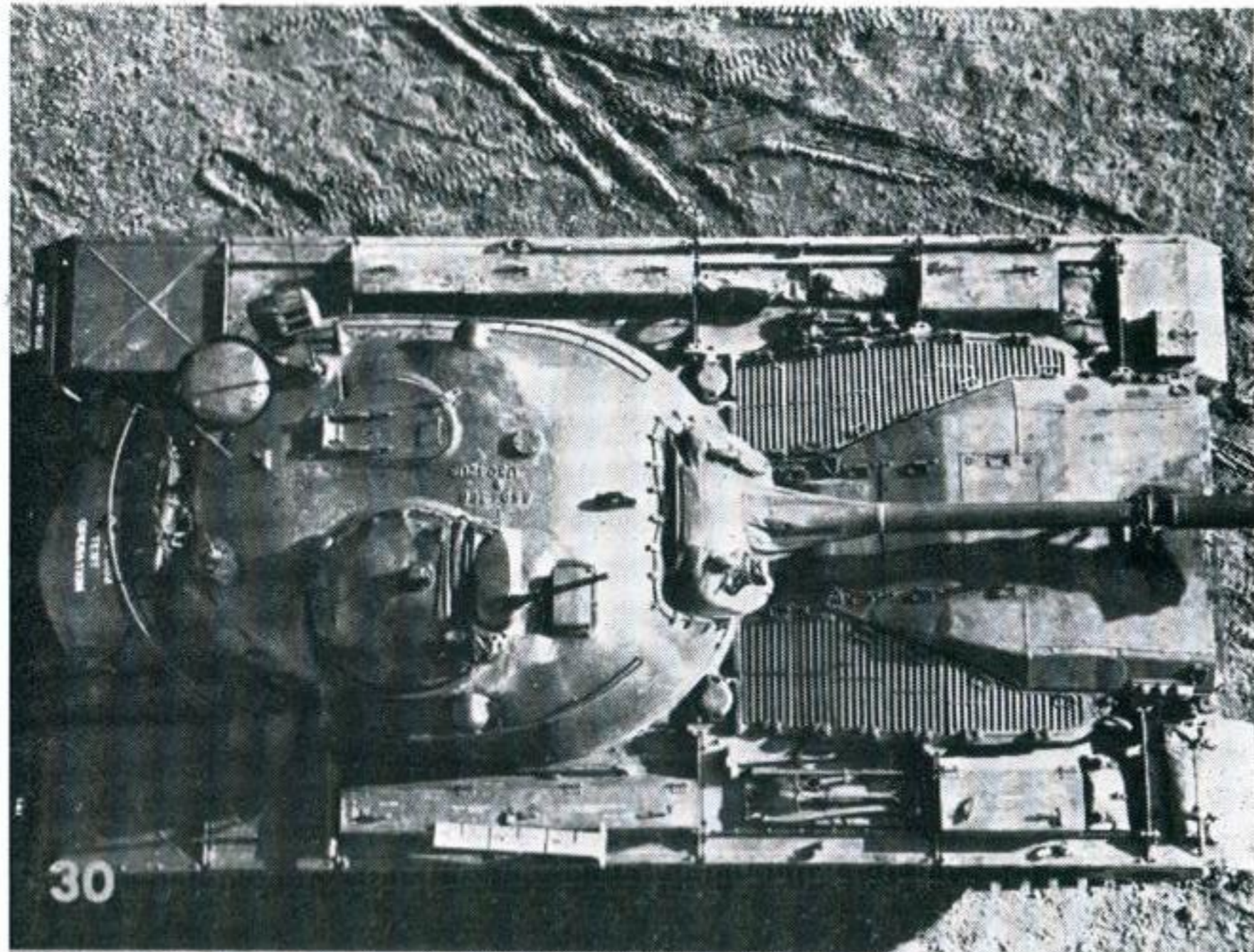


models, the M48A2 has six road wheels per side but only three, instead of five, track return rollers. Other characteristics which it shares with its predecessors are a cast hull and a well-rounded cast turret with a rather flat gun mantlet. The turret is surmounted by a large commander's cupola with a .5-inch machine gun and out of its sides protrude the heads of an optical range finder.

The main armament of the M48A2 is the same as that of the M48 and M48A1 and of the even earlier M47 medium tank, namely a 90-mm. gun, and all these tanks are often

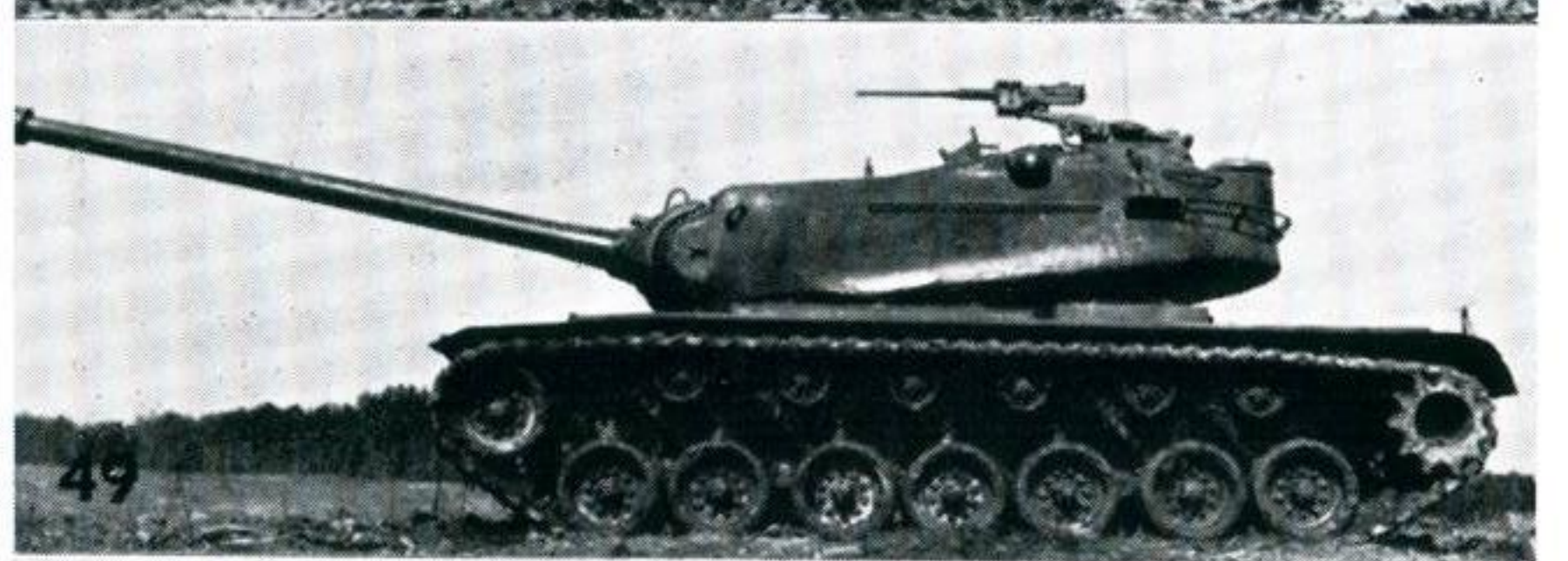
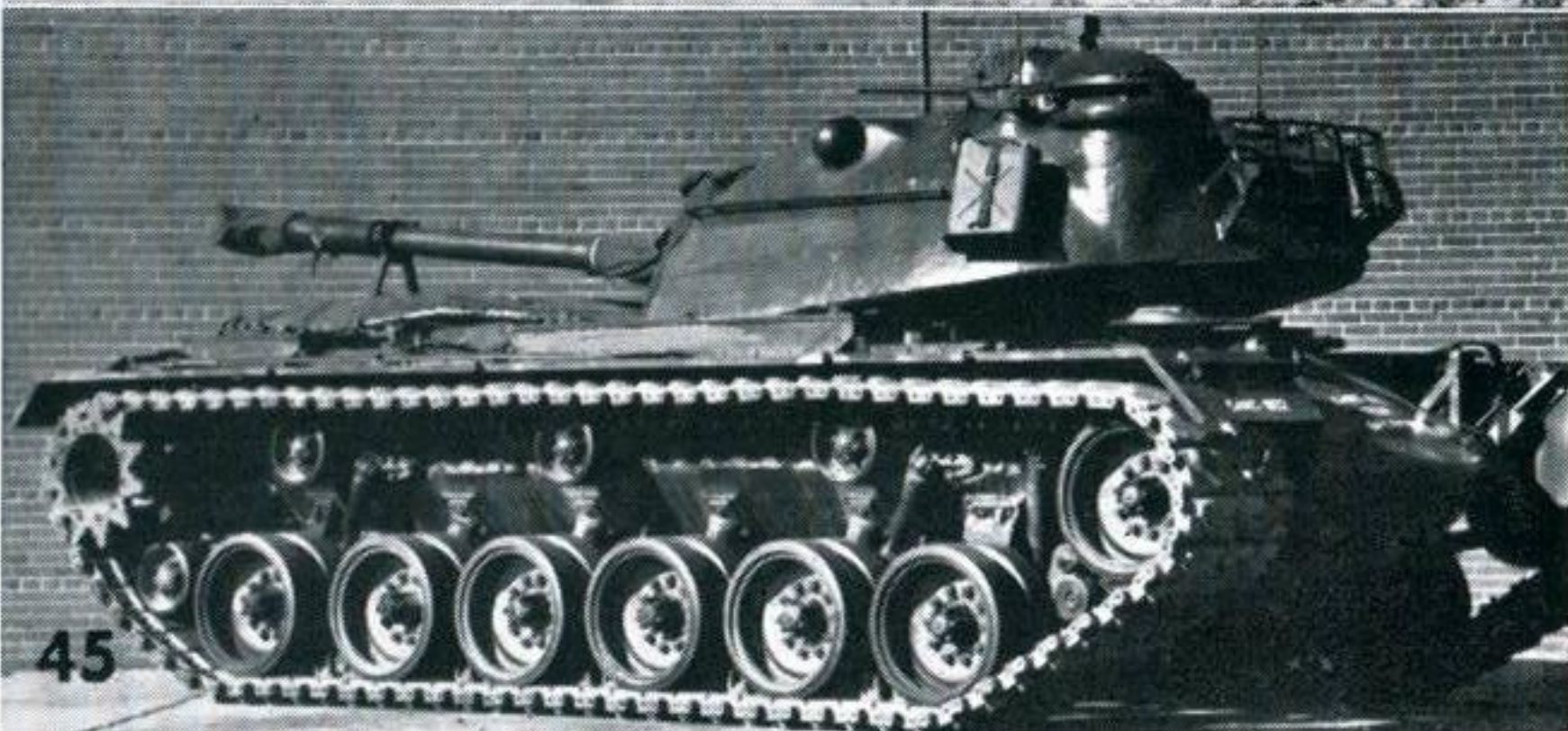
referred to as Pattons. However, on a number of M48A2 the 90-mm. gun has now been replaced by a 105-mm. gun. Moreover, the original V-12 air-cooled spark-ignition engine has also been replaced in a number of tanks by a V-12 diesel. When re-armed and re-engined in this way the M48A2 acquires the general characteristics of the U.S. M60 battle tank and in its modified forms it is likely to remain in service, under different designations, for several more years. Lesson instructions are on page 201, and solutions on the back cover.





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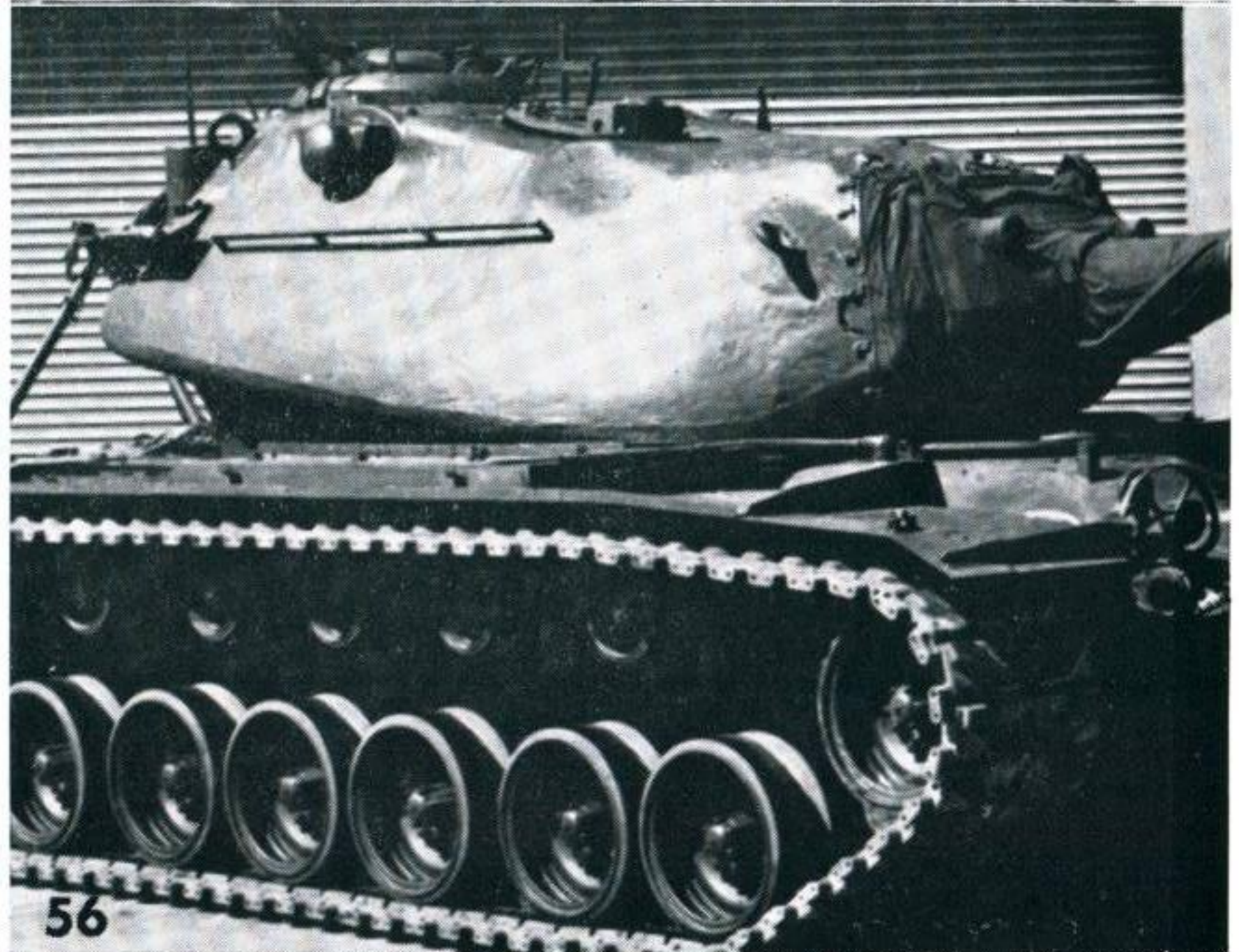
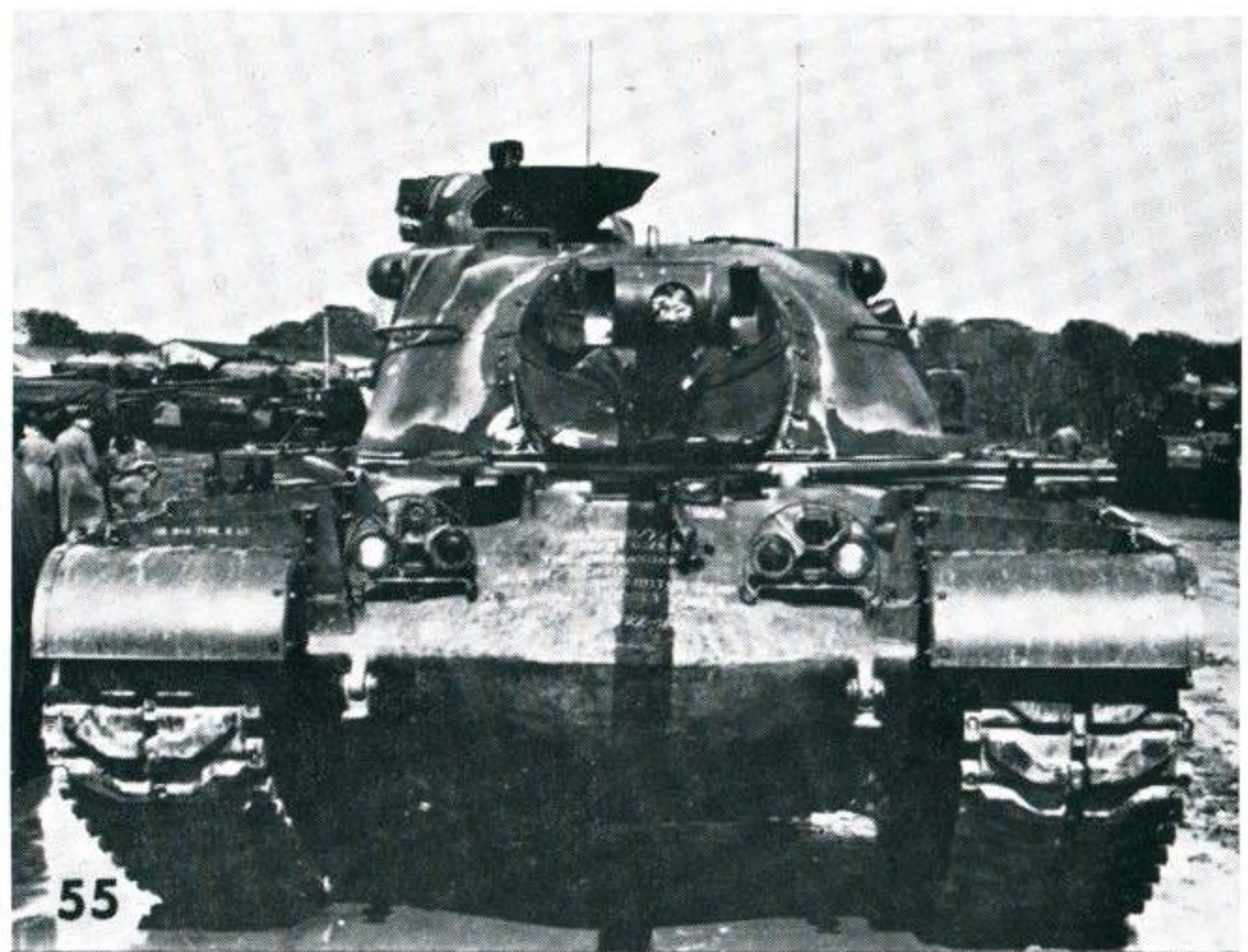




# M48A2

## medium tank

Lesson instructions are on page 201 Solutions are on the back cover





**Cover Photo:** A Chieftain battle tank negotiates a steep gradient.

**CORRECTIONS**

On page 107 of the April 1968 edition **Lightning T.4** should read **Lightning F.3**.

On page 108 of the April 1968 edition **Lightning F.3** should read **Lightning T.4**.

On page 330 of the December 1967 edition **Ship Recognition Hull Forms**

Under the first line of silhouettes delete **H2** and substitute **H12**.  
Under the second line of silhouettes delete **H12** and substitute **H2**.

**SOLUTIONS TO TESTS AND EXERCISES**

Page 200

**TEST PAPERS**

**M107:** Joker is second line 2nd picture.  
**M60A1E1:** Jokers are first line 3rd picture and third line 2nd picture.  
**YP-408:** Joker is third line 1st picture.

Page 201

**ASU-57:** Jokers are second line 3rd picture and third line 5th picture.

Page 202

**M41**

All targets are of **M41** except Nos. 4, 25 and 62 which are **T62s**.

Page 213

**CENTURION BRIDGELAYER**

Page 214

**ASU-85**

All targets are of **ASU-85** except Nos. 32 and 36 which are **Jagdpanzer Kanone**.

Page 218

**M48A2**

All targets are of **M48A2** except Nos. 15, 19, 29, 39, 49 and 56 which are **M103s**.

Page 224

**TEST PAPERS**

**AMX-13:** Joker is second line 1st picture.  
**PT-76:** Joker is third line 3rd picture.

**TEST PAPERS** Solutions above

**AMX-13?**



**PT-76?**

